



Issue 16

FAGIOLI

News

Winter 2015



NEWSLETTER

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OFFSHORE INDUSTRY



LOAD OUT OF A 9160 TON JACKET

Fagioli were involved in the load out operation for the offshore industry of a 9160 ton jacket in Italy. The challenging operation was performed by Fagioli using a Strand Jack system connected on the Jacket Lower Grillage (permanent shoes) on the quay side and on brackets / anchor block on the barge side. The jacket was a steel framed structure, approximately 146m long and 59m x 59m at the widest point. The jacket was skidded using two pairs of L750 Strand Jacks (750t capacity each) on the Launch Barge previously positioned by the client. At each location 2 jacks operated by hydraulic power packs and the jacks in each pair were linked together electronically, acting as one jack or individually for set-up operations. The power packs were, in turn,

controlled by a computerized process logic controller. This provided comprehensive control over every function of the operating system and displayed all the signals sent back from the jacking system. The load-out operation was carried out in two steps: the load-out operation onto temporary skid shoes (provided by the client) and the skidding on permanent skid shoes positioned on the barge. Pictures at the top show some details of the skid tracks, the jacket and the Strand Jacks used to complete the load-out.



WEIGHING AND LOAD OUT OF A 5167 TON OFFSHORE DECK

Fagioli performed the weighing and load out operations of a 5167 ton Deck Module on the Adriatic shore line. For what concerns the weighing operation the equipment used was the following:

- No 2x22 axles SPMT + No 2x20 axles SPMT + No. 1x13 axles + no 2x14 axles + No 2x16 axles + No 9 PPU's.
- No. 7 Pressure Gauges.

The SPMTs convoy was positioned below the module. The positioning tolerance was + 20mm (both in longitudinal and transverse directions). Two calibrated Digital Pressure Gauges were installed into each of the hydraulic pressure groups, one close to the input pressure from the PPU and a second at the end of the hydraulic group. A reading of each calibrated Digital Pressure Gauges was carried out with SPMT. The SPMTs took loads gradually (50% of the expected load, then 100%) checking at each step to ensure that the hydraulic system oil pressure levels were in compliance with the expected values of the hydraulic groups. The load was held for approx. 10 minutes and the operation repeated 3 times. For the load-out operation 157 axle lines SPMTs were used including some 50 ton capacity axles.





Courtesy of GE Oil & Gas

TRANSPORT OF MODULES IN ITALY

Fagioli were contracted by GE Oil & Gas for the transport, load out and load in operation of modules from a port in North Eastern Italy to the client's premises in Central Italy, close to the Tyrrhenian sea. Fagioli used 40 axle lines and 4 connecting beams for the transport of the 6 modules (No. 2 for each voyage) from the storage area to the loading quay. The Fagioli group-owned barge MAK was utilized for the sea transport and circumnavigation of Italy, successfully reaching the unloading port. The load-out operation was carefully carried out after a detailed analysis of the relevant dimensions of the modules and the unloading quay characteristics. Fagioli were also in charge of the ballasting calculations and procedures. Each module had the following dimensions: length 52,8 m; width 20,0 m ; height 21,4 m; weight 880 ton (contingency included). The SPMTs were raised up to nominal travelling height (1,5 m) and driven onto the barge over the bridging arrangement, adjusting the hydraulic system to maintain the item level. The module weight was gradually released onto the supports, checking the right settlement. Eventually the SPMTs were lowered and removed. After the grillage and sea-fastening operations were completed, the barge started the journey. Once arrived at the load-in port Fagioli performed reversely the same operations explained above. Picture at top shows the transport outside the storage area. Picture bottom left is a detail of the connecting beams and supports. Picture bottom right shows the module onto the barge.

Courtesy of GE Oil & Gas



Courtesy of GE Oil & Gas



INSTALLATION OF A 670 TON COLUMN

Fagioli India was involved in the lifting operations of one (1) VESSEL CT-232 (DH column) from its delivery position to the final installation position at a Petrochemical Plant, Mangalore in the Indian state of Karnataka. The column vessel weighing 670 ton, length 58,4 m with a diameter of 8,6 m. The tower lift and strand jacking system used for this operation was composed of 6 tower sections (12 m each), 2 Nos. L600 strand jacks for the hoisting operation, 4 Nos. L50 strand jacks used as stability guys. The column was gradually lifted in stages up to a vertical position. A crawler crane was used for the tailing operation. 2 nos. L50 jacks were used for horizontal skidding mounted on top of the main girder. 1800t capacity swivel beam arrangement was used to rotate the column by approx. 71 degrees counter clockwise to bring it to its final orientation. The column was skidded by 10m to bring it to its final position and further lowered onto its foundation with final shimming operation.





HEAVY ROAD TRANSPORT OF

Fagioli were contracted for the transport of 4 engines weighing 256 ton each from Tema port (Ghana) to Niamey power plant (Niger) for a total of 1550 km for each trip.

REVIEW OF THE MAIN OPERATIONS EXECUTED

- Offloading of no. 4 engines type at Tema port (Ghana) from vessel onto 18 axles modular trailers and storage operations in the port area.
- Inland transport of engines onto a 18 axles modular trailer with 5 prime movers pulling/pushing from the Port of Tema (Ghana) to the new Gorou Banda Power Plant (Niamey, Niger) across Ghana and Burkina Faso for a total distance of approx. 1550 km each trip.
- Discharging of the engines FOT at Gorou Banda site.

The above mentioned operations were repeated four times to allow the completion of the whole transport activity for a total of more than 12.000 km transiting through the countries of Ghana, Burkina Faso and Niger. The operations started on the 24th of September 2014 and ended on the 22nd of June 2015. The transport was one of the most demanding ever performed by Fagioli due to many factors (including weak infrastructures, extreme weather conditions, social upheaval problems) which forced the operators to face and prepare unexpected contingencies to resolve the unexpected problems which raised themselves unexpectedly on a regular daily basis.

4 ENGINES FROM GHANA TO NIGER

Some of the main difficulties faced during the transport operations were the following:

Road slopes; Over-bridging activities (8 each trip); By-pass construction (4 each trip); Bridges support structures (3 each trip); High temperatures; Heavy rains and river flooding ; Roads in poor conditions (picture bottom right); Crossing of 2 borders (Ghana – Burkina Faso and Burkina Faso – Niger); Coup d'etat in Burkina Faso; Equipment maintenance on the road; Intermediate storage of 3 engines in Ouagadougou due to by-passes construction delay for the late rains in Burkina Faso; Transport permit issues; Areas with high security risk for the crew and components. Fagioli supported local authorities to find engineering solutions for the repairing of several bridges which were in bad and worsening condition, with holes appearing and deteriorating support structures. Many by-passes were built (picture at the top) and over-bridges positioned along the roads (central pictures at the bottom) to allow the passage of the convoy. The unstable weather conditions such as extremely hot temperatures alternating with sudden heavy rainfalls (with the consequent raising of the level of the rivers where the bypasses were supposed to be built) slowed the transport operations several times. Poor and worsening road conditions during the whole journey forced Fagioli personnel to intervene with day-by-day maintenance inspections and interventions on the trucks and trailers as well as detailed supervision on the civil road repairs executed by local companies. Eventually, the engines safely arrived at destination where they were installed by the client with gantry lifting system. See next two pages for some additional pictures of this incredible job!



AFRICAN LANDSCAPES

“WORDS, WORDS, WORDS” is the literal translation of a famous Italian song performed by one of the most brilliant Italian singers called Mina (admired also by the great Frank Sinatra). The song talks about the vacuity of the words which, in some cases, have no meanings and relevant content. We do think that the pictures of this page do not need any further explanations. See also the 2 previous pages for additional info on the project.





CIVIL



INDUSTRY

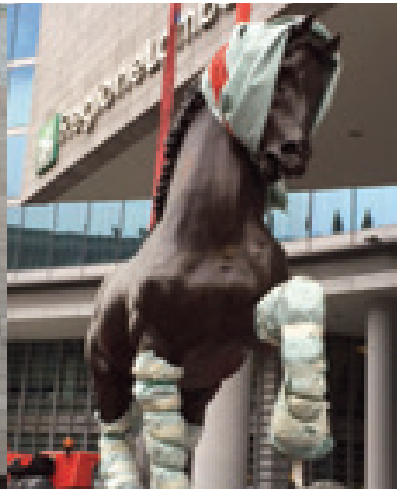
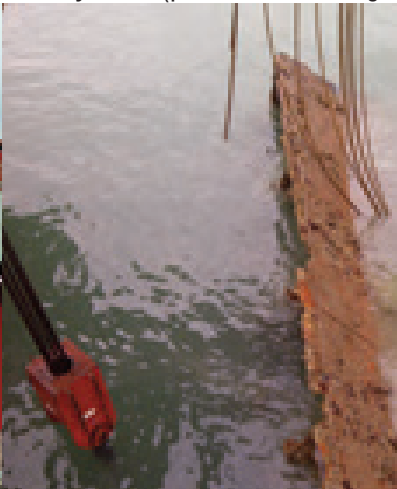


“If you read a lot, nothing is as great as you've imagined. Venice is -- Venice is better.” (Fran Lebowitz)

There are lots of things that could be said to define Italy as one of the most contradictory countries in the world but just one concept which fully represents its well-recognised and unique beauty: Italy as the homeland of art. These two pages are strictly related to the Italian artistic values as they show two projects performed by Fagioli, one executed in Venice (the most fascinating town on earth) and one concerning the immeasurable Leonardo da Vinci, genius of the Renaissance period.

RECOVERY OF AN OLD FLOATING GATE AT VENICE ARSENAL

The Venetian Arsenal is a complex of former shipyards and naval depot that played a relevant role in flourishing Venetian empire. The Arsenal was built during the 12th century and became the largest industrial complex in Europe. Thanks to the huge ships built there at that time, Venice was able to control the Eastern part of the Mediterranean Sea for decades (to safeguard the economic interest of its merchants) and later to compete with the Turks for the control of the Aegean and the Adriatic. Fagioli were in charge for the recovery operation of an old floating gate made of rocks (which was sunk on purpose in 2012) which used to be the entrance door for the ships into the narrow dry docks into which a vessel could be floated and the water pumped out, leaving the vessel supported on blocks for repairs and maintenance operations. Fagioli used a group-owned barge provided with a tailor made lifting system (two pictures at the bottom left) built on the bow of the barge composed of two longitudinal cantilever beams connected to a transversal beam. Each of the three beams were provided with three x 180 ton capacity strand jacks on top. The rock floating gate was previously cut into three pieces by the client, each section weighing up to 140 ton. The rock sections, sunk in front of the Arsenal building (picture at the top) were recovered with great care after they were connected to the strand and cantilever beam system (third picture at the bottom). The operation consisted in the lifting operation of each single section at a fixed height previously planned in order to allow the river transport within the “Bacino medio” (middle dry dock) which was filled with water. Once in position the blocks were lowered inside the dry dock (picture bottom right).



TRANSPORT OF LEONARDO DA VINCI'S HORSE SCULPTURE

TRANSPORT OF LEONARDO DA VINCI'S HORSE SCULPTURE

This is the story of one the greatest geniuses who ever lived on earth. Mr. Leonardo da Vinci was an inventor, a painter, a sculptor, an architect, a musician, a writer, a man whose interests involved so many fields such as science, cartography, engineering, mathematics, mechanics, literature, astronomy, biology, history, anatomy and more. A real genius of the Italian Renaissance period. In 1482 the Duke of Milan, Ludovico il Moro, commissioned Leonardo to create the largest equestrian statue in the world (picture top right preparatory drawing), a gigantic bronze horse. Leonardo produced only a clay model, because after having solved the enormous technical problem for the melting of the metal, the Duke of Milan decided to use the bronze (100 ton) to cast cannons against French armies who were in the meantime invading Milan in 1499. After 500 years Mr. Charles C. Dent founded a non-profit organization named Leonardo da Vinci's Horse, Inc. (LDVHI) to support the project to complete the unfinished work. After several failures in realizing the sculpture, the LDVHI organization eventually called the sculptor Nina Akamu. After years of detailed studies on Leonardo drawings and sketches she managed to realize 2 horses (each 8 m high), one destined for Milan (initially installed in a park and then moved at the Sforza Castle in the centre of the city) and one destined to a botanical and sculpture park in Michigan, USA. A third statue with reduced dimensions (2,5 mt high) was created by Akamu in 2001 and placed in Leonardo's birthplace, Vinci. Vinci's town decided to “give” the statue for 6 months to the town of Milan where Leonardo spent most of his lifetime and left hundreds of works including paintings, sculptures, models, all gathered at the Museum of Science and Technology. Fagioli were called to participate at this important event as a sponsor and as the official transport operator. Pictures at the bottom show some moments during the arrival of the horse in a dedicated case on a Fagioli trailer and the final temporary installation in front of the Regione Lombardia building by a Fagioli crane.

The bold words below the pictures at the top are not a misprint, just a joke: Leonardo was also famous for his specular writing!



CIVIL

INDUSTRY

LOWERING OF EARL'S COURT EXHIBITION CENTRE ROOF

BRIEF HISTORY OF EARL'S COURT EXHIBITION CENTRE

Earl's Court Exhibition Centre in London was built in 1887. After decades the area was sold in 1934 to an English tycoon who decided to transform the Earl's Court area into one of the most important exhibition centres in the world. After the refurbishing, Earl's Court re-opened in 1937 beginning to host many shows and exhibitions throughout the years, including important musical events thanks to the 19,000 seat capacity of the arena. After more of one hundred years of events and shows in 2010 it was decided to demolish the building with great opposition of local residents who were expecting a new redevelopment plan. In December 2014 the demolition works started.

FAGIOLI OPERATION

Fagioli were contracted for the lowering of the Earls Court Exhibition Centre roof structure (EC1), as part of the dismantling scheme developed by Keltbray. Due to the impact of the works in this residential area and also the proximity of London Underground and Network Rail lines, Strand Jacks were the chosen method.

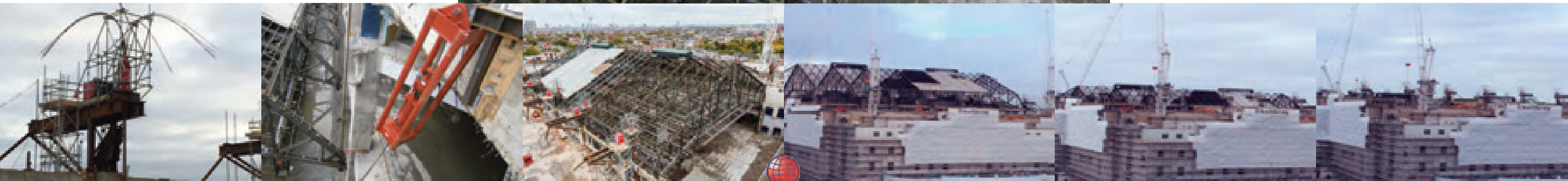
The 1,300 tonnes roof structure, constructed in the mid 1930's, consists of a central section of 7 steel girder trusses spanning 76m and with an overall length including hip ends of 126m.



The 25m lowering was performed by fourteen Fagioli L180 lifting / lowering jacks, mounted on cantilever beams (temporary structure) which in turn were on top of the permanent columns; each strand jack was assisted by an individual PPU. Four Fagioli L50 guy jacks in frames were mounted on each corner of the building to control any possible horizontal deviation of the roof during the operation.

Firstly, during the lifting Stage, the L180 jacks took the load and lifted the roof so that the trusses could be cut. After cutting the ends of the trusses the roof was lowered almost to ground level at an average speed of 5m/h where it was suspended while contractor carried out further cutting activities. Finally the roof was lowered until the full load was supported on stools located under the trusses. The jacking system was closely synchronised so that the trusses stayed level throughout the lowering procedure. Operations director from Capco's demolition contractor Keltbray commented "This is the first time that a steel structure of this size has been mechanically lowered some 25m to be disassembled at ground level in the UK"

The pictures show some details of the strand jacking system used for the lowering operation. The three pictures below taken from distance show an amazing view of the operation!





CIVIL

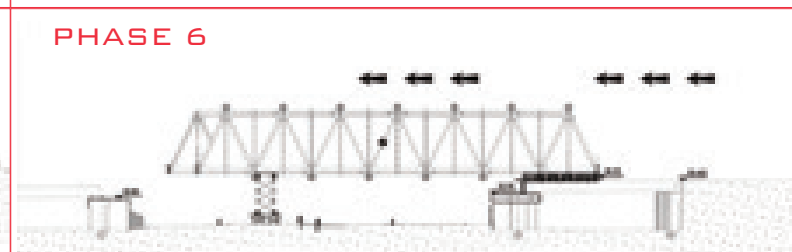
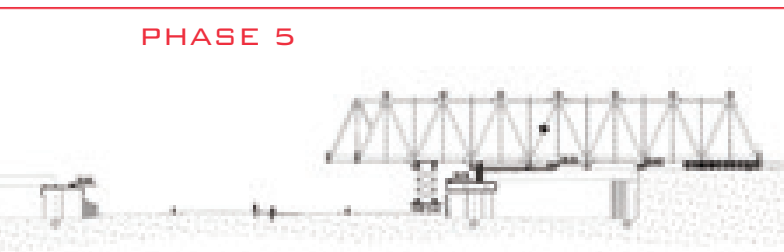
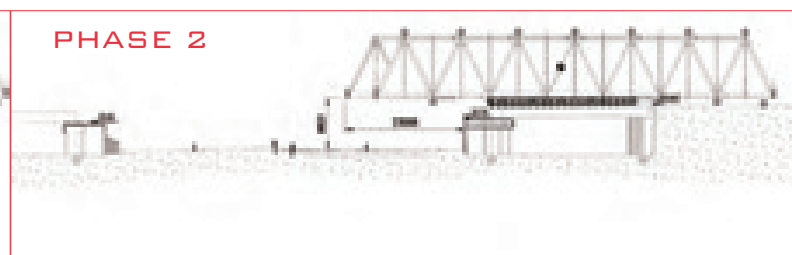
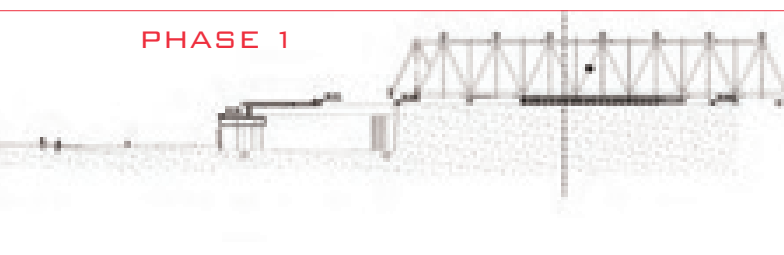
INDUSTRY

INSTALLATION OF A 882 TON

Fagioli were contracted for the transport and installation of a railway bridge in Central Italy. Dimensions of the bridge were the following: length 82 m; width 11,6 m; height 11,6; weight 882 ton. The railway bridge was positioned over the highway A14 and the Bologna ring road. The operation was divided in several steps and due to its complexity it was necessary to close the roads several times during the two nights required to execute the installation.

PHASE 1 Fagioli used 2x 18 axle lines SPMTs to lift the bridge from its supports (picture top left) and move it for 500 m.

PHASE 2 The bridge was moved ahead and was left suspended above the highway (picture top right).



PHASE 3 The bridge was lowered onto temporary supports (provided by the client).

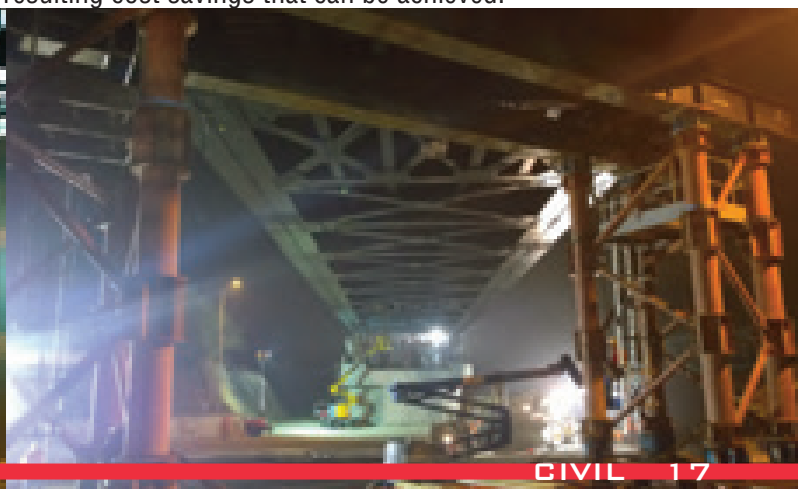
PHASE 4 Fagioli provided 2 x 8 axle lines SPMTs positioned at the back of the item.

PHASE 5 The highway was closed in order to allow the positioning of 2x12 axle lines provided with tower structures at the front of the bridge (picture top left on the following page).

PHASE 6 The convoy was moved ahead by the SPMTs (the trailers at the back and those at the front were operating at different height levels).

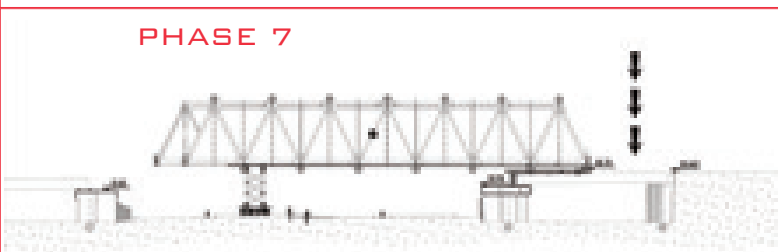
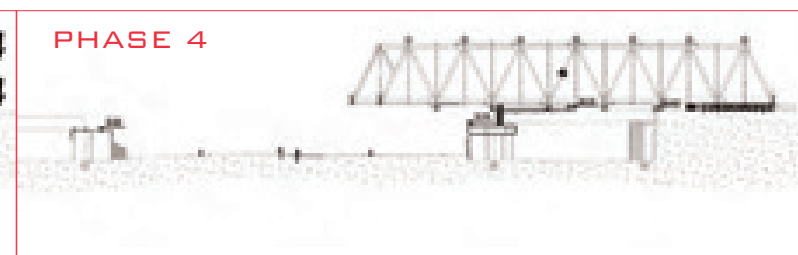
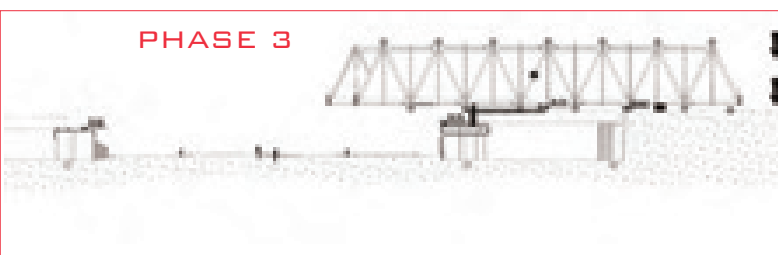
PHASE 7 The bridge was released by the SPMTs at the back onto some rollers (2 x 300 ton each) previously positioned (picture top right on the following page).

PHASE 8 Final installation of the bridge by means of SPMTs and rollers.



RAILWAY BRIDGE BY SPMTs AND ROLLERS

It took two nights to perform this operation. During the second night, after the closing of the highway, road barriers and guard rails were removed in order to allow the transport and rotation of the bridge. Once in correct position the bridge was released onto its final supports where the client performed the last alignment and connections. 40 ton capacity SPMT axle lines and 6 meters high tower structures provided with beams on top were used for the duration of the operation. No. 2 x 300 ton Rollers were used for the alignment and rotation operations. Picture at the bottom left (previous page) shows some details of the towers and beams supporting the bridge at the front. Pictures at the bottom right (previous page) shows the span of the bridge.



Pictures at the bottom illustrate the final moments of the installation and positioning operation of the 882 ton railway bridge. The sequential processes of conventional onsite bridge superstructure construction included the following actions: erecting beams; erecting stay-in-place or temporary deck forms and overhang forms; installing shear studs on steel girders; tying deck reinforcement; placing deck concrete; curing deck concrete; removing temporary framework; placing barriers and appurtenances such as light poles, screens, and signs. With SPMT technology, the conventional sequence is reduced to a continuous one step: move the prefabricated bridge superstructure to its final position. The significant construction time savings obtained by using the quicker SPMT solution to install the prefabricated bridges compared to the conventional bridge phase by phase construction procedures can be seen in the operations detailed in these pages, we believe the evidence speaks for itself detailing the time and resulting cost savings that can be achieved.

HEAVY

INDUSTRY

RELOCATION OF

HARBOR CRANES

Big picture: Courtesy of
Officine Meccaniche Galileo



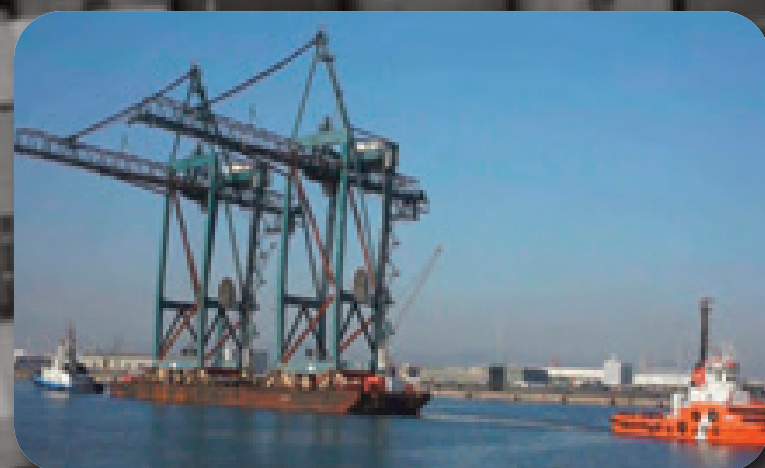
Fagioli were involved in several projects for the relocation of harbor cranes in Italy and in the Mediterranean area. Fagioli mainly used group-owned equipment to perform the operations including our engineering expertise.

ROAD AND SEA TRANSPORT OF 9 CRANES IN SPAIN

Fagioli were called to relocate No. 6 Ship To Shore cranes (970 ton each) and 3 Rubber Tyred Gantry cranes (including accessories) from Barcelona/Valencia to Sagunto port. Fagioli barge Mak and tugboat were used to perform the sea transport including Fagioli ballast pumps and winches. For the load in and load out operations Fagioli utilized 40 axles lines SPMTs with 2 PPUs, transport beams with spreader Ro-ro ramps, and grillage. Fagioli engineers performed all of the ballast calculations (pictures at the bottom).

MOBILE HARBOR CRANE AT ANCONA PORT IN ITALY

Picture on top shows the load out operation of a mobile harbor crane weighing 405 ton at Ancona port by means of group-owned barge including the required sea fastening and grillage studies.



RELOCATION OF 8 STS CRANES

Fagioli used their new generation SPMTs with capacity of up to 60 ton per axle, to perform the relocation of no. 8 STS Cranes (up to 1443 ton each) at La Spezia port. 52 axle lines SPMTs divided into two rows, were utilized to successfully complete the operations. Big photo in the centre shows the passage of the convoy at the port while the bottom right picture is a detail of the new Fagioli SPMTs.

TRANSPORT OF TWO GRAB CRANES IN MOROCCO

Fagioli were involved in the transport of 2 grab cranes weighing 1000 ton each from Jorf Lasfar port old quay to Jorf Lasfar port new quay by barge P-Mak. The distance between the two quays was about 300 m. Fagioli used 72 axle lines SPMTs, group-owned barge P-MAK, and 6 pumps for the ballasting operations. Fagioli were also involved in all of the required engineering operations (picture bottom left).

ITALY - MOROCCO: SEA TRANSPORT OF TWO MOBILE CRANES

In Italy and in Morocco Fagioli were contracted for the sea transport of a MHC 5000 crane (450 ton) from Livorno to Bari and the sea transport of a MHC crane from Casablanca to Tangier (picture top right). They were both loaded onto geared H/L vessels under Fagioli responsibility.



HEAVY INDUSTRY

RELOCATION OF 12 HARBOR CRANES IN ONE MONTH

SEPT.

VADO LIGURE **25**

VADO LIGURE **26**

CASABLANCA **28**

CASABLANCA **29**

OCT.

CASABLANCA **5**

CASABLANCA **6**

CASABLANCA

VALENCIA

VENICE

VADO LIGURE

LA SPEZIA

LIVORNO

OCT.

8 LA SPEZIA

9 LIVORNO

10 LIVORNO

11 LIVORNO
VALENCIA

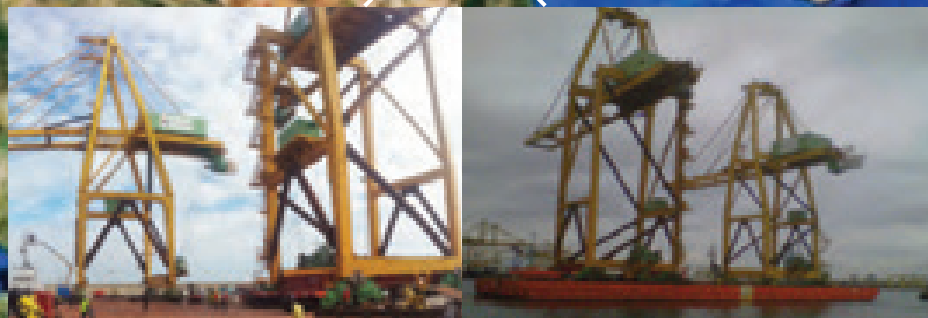
12 LIVORNO

14 LA SPEZIA

19 VENICE

20 VALENCIA

22 VALENCIA



Fagioli were involved in several projects concerning the relocation of harbor cranes in Italy, Morocco and Spain. Fagioli relocated **12 harbor cranes in one month**. Fagioli mainly used group-owned equipment to perform the operations including Fagioli in-house engineering expertise.

ITALY: Transport and load out load in operations of 2 x 930 ton harbor cranes from Vado Ligure to Livorno for the Italian crane manufacturer "OMG", by 44 axle lines SPMTs and barge

MOROCCO: Transport and load out operations of 2 x 1000 ton harbor cranes at Casablanca port by 72 axle lines SPMTs and barge

ITALY: Transport and relocation operations of 3 x 1300/1150/1145 ton harbor cranes at La Spezia port by 44 axle lines 50/60 ton capacity SPMTs

SPAIN: Transport and load out operations of 2 x 581/800 ton harbor cranes in Valencia by 40 axle lines SPMTs and barge

ITALY: Transport, load out and load in operations of 2 x 900 ton harbor cranes at Livorno port by 44 axle lines SPMTs

ITALY: Transport and loading operations of a 320 ton crane by means of 24 axle lines SPTs at Marghera port (Venice)



ROMANIA: INSTALLATION OF A

Fagioli were awarded the contract for the installation of a 285 ton Hot Leveller, 11,1 m high, 5,5 m wide. Fagioli used 16 axle lines SPMTs for the transport within the warehouse and a gantry lifting system with skid tracks for the final installation of the item.

OPERATIONAL PROCEDURES

The first step of the operation was the assembly of the trailers which were then used to move the item from its original position onto dedicated supports. 16 axle lines were used to load the hot leveller and move it inside the warehouse. Just before the heavy transport, Fagioli utilized steel plates placed at ground level for the transit of the convoy. The gantry lifting system was partially assembled on the left side of the production zone with a lifting frame structure provided by the client.

285 TON HOT LEVELLER

The gantry track rail was positioned on top of the installation area and connected to the gantry lifting system. The gantry lifting system was skidded from left side to right side just over the installation zone. The gantry track rail on the left side was removed. This operation allowed the necessary space for the insertion of the hot leveller and SPMTs convoy. The item was held in position by the SPMTs, whilst the gantry crane skid tracks were repositioned. Gantry crane system was skidded from installation zone into the left side just above the hot leveller (still loaded onto the SPMTs). Once in position the lifting frame was connected by the client directly to the item. The leveller was lifted by the gantry lifting system (and the lifting frame) and skidded in line above the installation zone. Once in position the leveller was lowered by the gantry lifting system.

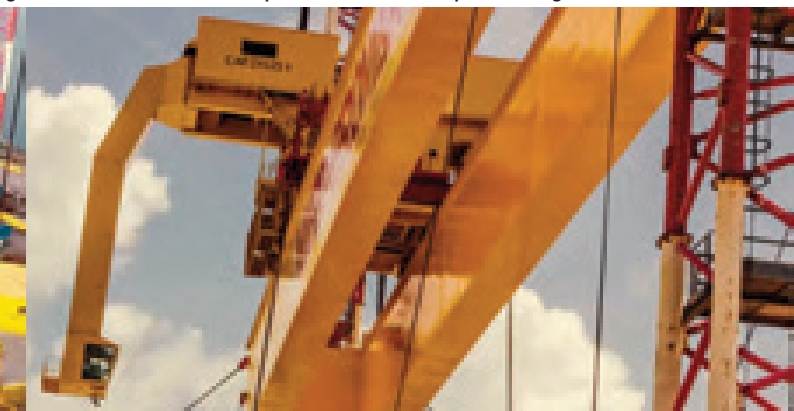
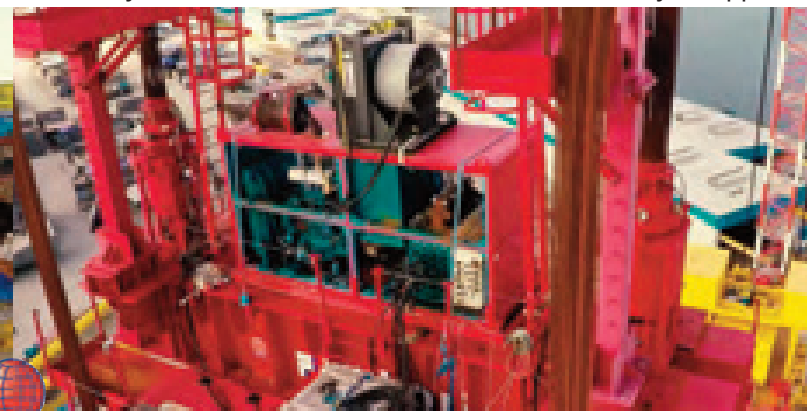


BRAZIL: ASSEMBLY OF A 300 TON CAPACITY GOLIATH CRANE

Transdata Fagioli Do Brasil (TFB), a joint venture company between Fagioli and Transdata was awarded the demanding contract for the lifting and assembly of a 300 ton Goliath crane in Pernambuco, Brazil.

The crane was composed of several components: one Double Main Girder (570 ton); one Upper Trolley (210 ton); one Lower Trolley (120 ton); one Service Crane (65 ton); one Fixed Leg (270 ton); one Hinged Leg (110 ton); No.4 Traveling mechanism named bogeys (40 ton each). It was decided to use Fagioli tower lift system composed of 2 x 10 modular sections for a total height of 65 meters to complete the assembly of the Goliath crane, considering an aggregate weight of 1465 ton. The main equipment used for the operation was: a jack support beam on each tower equipped with n. 2 L600 strand jacks; No. 4 stability guys, (L100 strand jacks) attached to Main Girder Extensions (transversal); No. 4 stability guys (L50 strand jacks) attached to Main Girder Extensions (longitudinal); a Rolling jack Support beam (RJSB) pulled by 4 horizontal strand jacks L50 positioned on the Main Girder Rails; No. 2 strand jack L180 for the legs roll-up; Legs tailing frames for legs rotation. The main girder was transported under the tower lift system and after the connections was made the lifting operation commenced. When the girder was lifted approx. 4.2m from ground level, temporary lashing was fixed between Girder and Towers. The Upper trolley was then installed with crane on top of the Girder. The Girder was lifted approx. 58m from ground and the stability guys L100 and L50 tensioned.

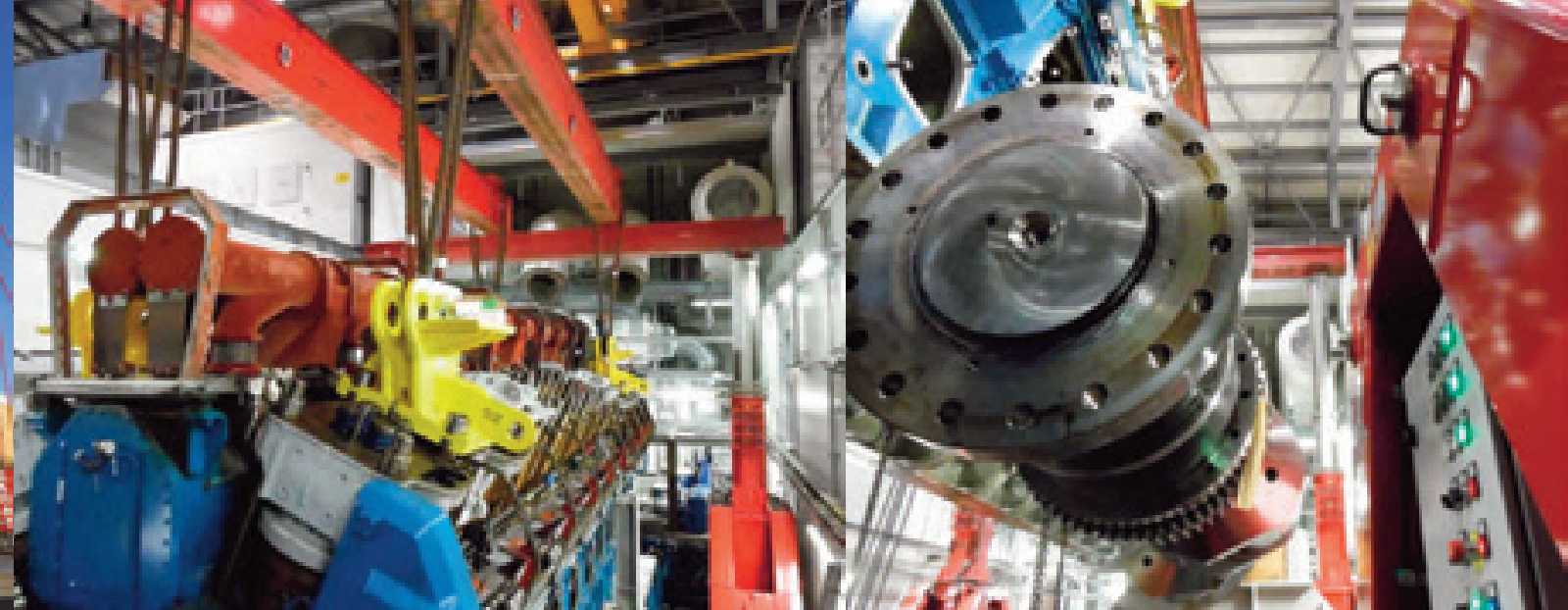
The Fixed leg (with roll-up devices connected at the bottom of the leg) was transported under the Girder, in the lifting position (by Client) whilst the L180 anchor housing was attached to the leg lifting brackets. The stability guys L50 were de-tensioned and the jack frames removed. The fixed leg was lifted by the L180 Strand jacks on the girder and, at the same time, the L50 strand jack on the Girder was pulled in order to move the rolling jack Support beam along the roll-up direction. Once the Fixed leg was in vertical position, the stability guys L50 were positioned and tensioned and the fixed leg welded by the client to the main girder. The Upper and lower trolley were moved on the girder. Using a crane, the Rolling jack Support beam was moved into the position for the lifting of Hinged leg. The Hinged leg was transported under the Girder. After the connections, the stability guys L50 were de-tensioned and the jack frames removed. The Hinged leg was lifted by L180 strand jacks and, at the same time, the L50 strand jack pulled on the Girder the rolling jack Support beam along the roll-up direction. Once the Hinged leg was vertical, it was moved up to the final fixing position. Then the stability guys L50 were positioned and tensioned. The Hinged leg was connected to the Girder by Client. Last operation was the installation of the service crane and the bogeys. The bogeys were eventually transported until the final position under the legs, by the Client. Once both legs were in final position, the girder was lowered over the bogeys and connected by the Client. The service crane was installed by a supporting crane that had been positioned on top of the girder.





WEIGHING LIFTING, ROTATION AND TRANSPORT OPERATIONS OF A 320 TON FLUTE SYSTEM

Fagioli were involved in the handling operations of a 320 ton Flute system for the offshore industry. First Fagioli were called to execute the weighing system in order to gravity position. Fagioli prepared No. 4 flat capacity of 200 ton each. The load cells were supports (pictures at the bottom show some positioning). Each load cell was placed over a between the support points. The flute system main phases: vertical and horizontal weighing. cranes were used to lift the flute in vertical the supports where the load cells, connected information of the weight. This operation was picture). After these procedures, the crawler degrees of the item being careful to distribute to compensate the weight of the flute during top show some details of the rotation. Once position, it was laid upon its supports for the operation. For three times the item was lifted supports for the readings of the load cells values. Once completed the lifting and lowering operations, the average number of the values taken during the vertical and horizontal procedures was the actual weight of the flute system: 320 ton. After the rotation and weighing operations the flute was ready to be taken away. Fagioli provided 20 axle lines SPMTs composed of No. 4 trailers (linked with two connecting beams) on top of which the item was released, fastened and transported to the client quay. Dimensions of the flute were the followings: length 27,5 m; width 10,8 m; height 10,9 m; weight 320 ton.

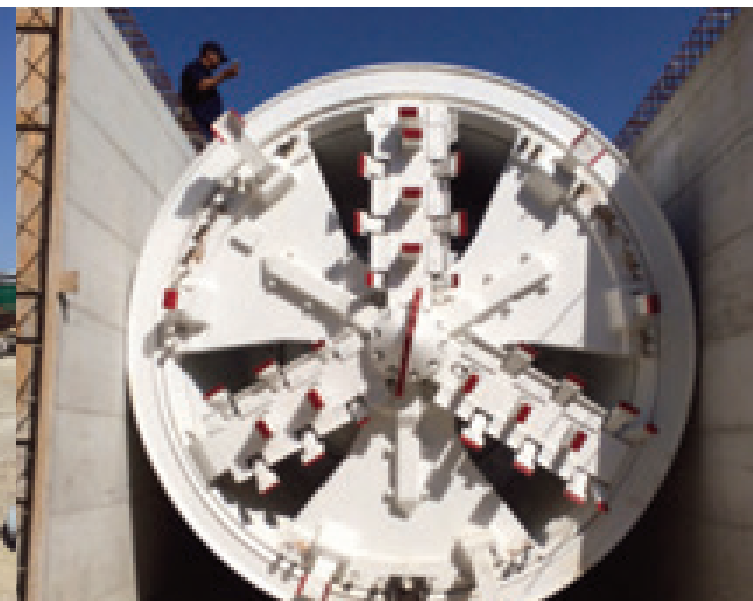
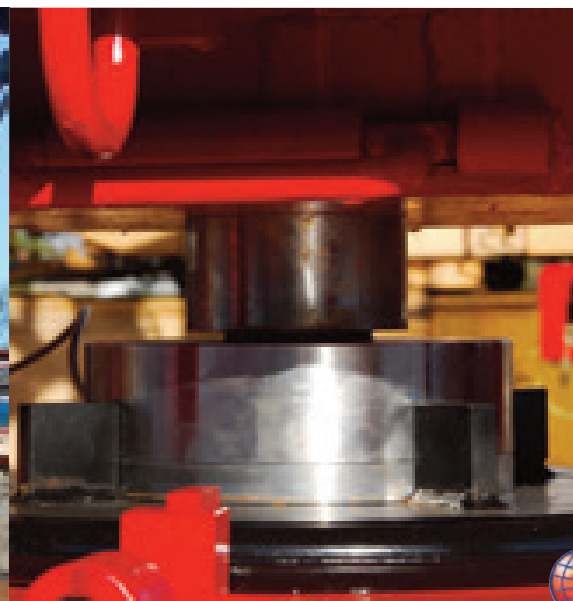


ENGINE SHAFT EXCHANGING OPERATIONS

In Malta Fagioli were contracted for the engine shaft exchange operations of a 180 ton engine (picture top left). Fagioli provided a gantry lifting system for the execution of the operation within Client's premises. The engine block was lifted 1925 mm above the engine basement. Safety stools were positioned by overhead crane under the engine block. An engine shaft skidding system was provided by the Client. The damaged engine shaft was lowered onto the skidding system (picture top right). Safety stools were removed and the engine shaft was skidded on laterally. The engine block was lowered safely onto stools, then two gantry cranes legs removed on right side. The engine shaft was exchanged and the two gantry crane legs re-assembled. The engine block was lifted and the safety stools removed. The new engine shaft was skidded into position whilst the safety stools were placed again under the engine basement. The new engine shaft was lifted, safety stools and engine shaft skidding system both removed. The engine block was finally lowered onto base frames for its final position. The gantry lifting system is the ideal solution for heavy lifting operations in restricted areas.

TRANSPORT OF TUNNEL BORING MACHINE SECTIONS

Fagioli were involved in the transport activities of tunnel boring machine sections. Fagioli provided a 6 axle lines SPMT for the operation to be executed for the completion of a tunnel at Monte Cotugno in Southern Italy where, between 1970 and 1982 it was built the largest dam made of clay in Europe. The main challenge was the restricted passage to get into the tunnel. Fagioli, in collaboration with the Client, positioned transversal and longitudinal beams (fixed to the trailer by bolted plates) on top of the platform trailer and connected them with the tunnel boring machine sections (picture bottom left). The maximum transport weight was 52 ton (auxiliary TBM sections). The most demanding transport operation was the one performed for the head of the TBM (33 ton) due to its width of 3,3 m which left few centimetres of clearance between the tunnel walls as it is well illustrated by the picture below on the right.





PROJECT AND

The projects awarded to Fagioli require the capacity to offer “turnkey” solutions involving all of Fagioli’s core business activities. Fagioli are able to provide at the same time, engineering know-how, in-house project logistics and freight forwarding capability, heavy transport and lifting services in order to handle all of the different phases of a complete project. Turnkey projects solutions can be applied to many different types of projects including the revamping of Oil & Gas as well as the construction of new Power plants. Materials originate from all over the world and must be delivered on schedule to the site to meet critical installation dates. This kind of project generally includes three main activities: shipment of general cargo materials; shipment of heavy items or modules; lifting and final installation of heavy loads. Fagioli were contracted to provide their services for the upgrading of a refinery in Belgium.

ANWERUP EPC2 PROJECT

“The refinery at the time being has a capacity of 270,000 barrels per day (b/d). The refinery is also unique because it produces its own electrical power from wasted heat recovery. As a matter of fact the refinery owner invested in the past in advanced technology in order to collect the wasted heat from the cracking chimneys to integrate in the refinery a combined cycle heat and power generation plan. The production of solvent and high olefins was added in 1991. The refinery upgrading operation will increase the percentage of production in the lighter grades of fuels as demanded by the European market. Within the refinery expansion plan a delayed coker unit (DCU) with related facilities will be added. The refinery upgrades are expected to run by 2017(2B1st Consulting source)”.

FORWARDING

Fagioli were involved in the project logistics activity for the handling, transport and final installations of modules, reactors and other heavy items on site. The main challenge of this upgrading operation is to work in a living plant already congested by previous expansions with a top level degree of safety for all the personnel involved on site.

It's planned to charter No. 10 dedicated H/L vessels for the sea transport of the modules loaded in South Italy to Belgium. The first load out operation was executed in July 2015, while the last one is expected to be performed during the first months of 2016. It takes an average time of 17 days for the sea journey.

Modules to be mobilized:

- No. 42 PAS with length up to 18,50 m; width up to 9,30 m; height up to 10,29 m; weight up to 15 ton
- No. 35 PAR with length up to 39 m; width up to 14 m; height up to 24,10 m; weight up to 495,2 ton
- No. 12 PAU with length up to 24 m; width up to 14,20 m; height up to 26,90 m; weight up to 856,70 ton

From what concerns the other items, the reactor handled by Fagioli had the following dimensions 30,82 x 6,05 x 5,13; 257 ton. The heaviest module (1133,7 ton) will be offloaded and transported up to its final destination on site on February - March 2016 by means of 64 axle lines SPMTs. The items are offloaded in Belgium directly onto trailers and transported into a dedicated storage area (picture bottom right). Then the items will be loaded again and transported on site with final installation executed by Fagioli trailers and crawler cranes. This job reveals the peculiar capability of Fagioli to handle an entire project on a door-to-door basis. As shown in the pictures in these pages Fagioli performed the road transport of the modules and items up to the loading port where dedicated heavy lift vessels chartered by Fagioli Project Logistics department executed the sea transport. One big project for one company with the reliable competence to handle Project Logistics and heavy transport and lifting activities at the same time.





PROJECT AND

AEGEAN REFINERY PROJECT

The STAR project is an acronym of a joint venture between Socar and Turcas company involved in the Aegean Refinery project in West Turkey. The investment for this project is about 5 billion USD with the main goal to drastically reduce Turkey's dependency on imports of many petroleum derivatives. The refinery is expected to have a capacity of 214,000 b/d of crude oil, almost 10 million ton/year. The construction of the refinery started in 2014 and is expected to be finished by 2018. The terminal capacity will have 64 tanks with a total storage capacity of the refinery of about 1640 million tons.

Fagioli were contracted by a joint venture composed of the main EPC contractors for the shipping and forwarding activities of all the material originated from Europe, India and China including the heavy lift components and from Far East for the remaining goods up to the Turkish arrival port. Fagioli are responsible for the receipt of the correct packing lists and the booking of appropriate cargo vessels or aircraft; the supervision and reporting services for loading and discharging in the relevant ports; the ocean and air transportation activities including the coordination for shipping arrangements between all parties as well as the required documentation (custom procedures, shipping status, updates and other certificates). The materials involved include containers and general cargo and major heavy lift components such as crude tower, vacuum towers, diesel HDS reactor, recycle gas scrubber..with the relevant weight up to 845 ton.

Fagioli project logistics and freight forwarding department created a dedicated division for the handling of this long-term project including the placing of personnel who are working at Client's premises.

FORWARDING

SAUDI ARABIAN PROJECT

Fagioli were awarded for the provision of forwarding and shipping services for the construction of a phosphate plant in the North area of the Kingdom of Saudi Arabia. The project involves the development of a greenfield phosphate complex to supply merchant grade phosphoric acid to the fertilizer, food and animal feed industries. The project will provide 720.000 ton/year of phosphate and compound fertilisers. Fagioli's freight forwarding involvement and activity will be for the complete duration of the project between April 2015 and December 2016. The Fagioli scope of work involves the shipping of materials originating from all around the world and shipped up to Jeddah port. Picture at the bottom left shows a moment of the loading operations of some cases. The total amount of material planned to be shipped by Fagioli will be about 12.000 cubic meters.

FREIGHT FORWARDING ACTIVITIES FOR HUMANITARIAN AIDS

Fagioli's Emergency Intervention Service Department is a registered supplier with the International Humanitarian Organizations for the handling and transportation of relief cargo to destinations throughout the world. Fagioli forwarding division takes care of the gathering of all the material, documentation, custom clearance and organization of loading and unloading operations. In some cases Fagioli provide also the prosecution up to final destination. Picture bottom right shows the loading of ablution modules at Brindisi port with final destination an African country.



LOOKING TO THE SKY:

THE HOLY SHROUD

Believe it or not, the Holy Shroud (Sacra Sindone) is one of the great all time mysteries related to Faith and Religion. Fagioli were involved in the transport of this sacred relic for exposition in Turin. Quoting the Holy Shroud website “The Shroud is a linen sheet whose weave is a herringbone pattern made in the ancient Egypt manner before Christ. It measures 442 cm long by 113 cm high plus a 8 cm strip sewed lengthwise. On the tissue there is a faint impression of an image, the frontal and dorsal one of a man who suffered the death of crucifixion. It's a “sudarium” or shroud and the image distinctive characteristic is of being like one of a negative film.” The exposition of the Holy Shroud took place for 67 consecutive days from April to June 2015 in the Cathedral of Turin. Fagioli provided a trailer for the delicate transport of the relic which was closed into a tailor made case. The case for the exposition had the following dimensions: 4,6 meters long; 1,4 meters high; 2,8 meters wide; weighing 2,8 ton, a big box with crystal surface multilayer on top of it in order to guarantee at the same time the view and the safety of the Shroud. The case was unloaded from the Fagioli trailer by a mobile crane and positioned onto a sophisticated device inside the cathedral. The device had a turning mechanism which allowed after its vertical positioning that the case could be turned to give a complete view of the relic. Fagioli were also a main sponsor of the event. Pictures at the bottom : courtesy of Renzo Bussio.



THE SACRED AND THE PROFANE

AEROSPACE INDUSTRY

© NASA

Fagioli Turin were also involved in several transport and forwarding activity for the aerospace industry. The project shown in the three pictures at the centre of the page concerns the transport and loading activity of the “Orion Service Module” a test model built by Thales Alenia Space in Turin for the European Space Agency (ESA). The module was destined to USA for the NASA project called “Orion”. From NASA source: “NASA's Orion spacecraft is built to take humans farther than they've ever gone before. Orion will serve as the exploration vehicle that will carry the crew to space, provide emergency abort capability, sustain the crew during the space travel, and provide safe re-entry from deep space return velocities. Orion will launch on NASA's new heavy-lift rocket, the Space Launch System. The module sits directly below Orion's crew capsule and provides propulsion, power, thermal control, and water and air for four astronauts. The solar array spans 19 m and provides enough to power two households. The module is serving as Orion spacecraft primary power and propulsion component until it is discarded at the end of each mission.” The module was more than 5 meters in diameter and 4 meters high, with a weight of 13.5 tonnes. Being a test model, the module which arrived in USA on the 10th of



November, will undergo “rigorous vibration tests in NASA's Plum Brook Station in Ohio to ensure the structure and components can withstand the extreme stresses during launch”. Fagioli were involved in the lifting of the module inside Thales Alenia premises, the consequent positioning operation onto Fagioli trailer and the transport at the airport where a dedicated chartered aircraft vessel was waiting for the flight. “The first, unmanned, launch of the full Orion vehicle is planned for 2018 with the first European Service Module. It will fly beyond the Moon and back, returning to Earth at higher speeds than any other previous spacecraft. During the mission, the module will detach shortly before re-entry into Earth's atmosphere”. Picture at the top is a rendering of the Orion spacecraft. Pictures at the bottom show another road transport project executed by Fagioli Turin for the same client. The satellite called SICRAL2 (a new generation military communications to satellite) was loaded onto an Antonov with final destination French Guyana where it was successfully launched into space in late April 2015.



HEAVY ROAD TRANSPORT



Heavy road transport activity is one of Fagioli main core businesses. Fagioli have accumulated a long-standing experience in heavy transport over long distances being able to supply, a dedicated survey and engineering department as well as a big fleet of equipment which includes heavy trailers, semi-trailers, heavy haulage trucks.

MOROCCO EXPERIENCE

Morocco has started one of the world's largest solar energy projects in the world with an estimated cost of about \$9 billion. Main scope of the project is to create 2,000 megawatts of solar generation capacity by the year 2020. The first step is the construction of a 160-megawatt solar power plant near the desert city of Ouarzazate.

Fagioli within this scenario, were called to perform the transport of Cargo Pressure Drums, weighing 362 ton with final destination the Ouarzazate power plant. Fagioli utilised 4 prime movers with a 1 x 18 axle lines trailer (3 rows) with the transport and logistics support of several Fagioli drivers and operators, a mechanic and a spare container for the eventual assistance during the long trip. The items were loaded in Nador and mobilized for more than 800 km up to final destination. Big picture on top and at the bottom show some transport moments, in enchanted Moroccan places, sometimes sprinkled with roads in poor conditions and steep slopes. The Moroccan solar power project is expected to cover 3,000 hectares of ground and provide a generation capacity of 500 megawatts, enough to meet the electricity needs of Ouarzazate's 1.5 million residents.



TRANSPORT AND FINAL INSTALLATION OPERATIONS IN ALGERIA

Fagioli Sarl Algeria supported by Fagioli Spa was successfully involved in the transport and installation onto foundations of 3 heavy items for a power plant in Algeria:

- 220 ton Gas turbine
- 177 ton Generator
- 40 ton Auxiliary Module

The items were unloaded at Skikda port by 2 x 9 axle lines modular trailers (utilized for the transport of the Gas turbine and the Generator) and a 5 axle lines low bed semi-trailer (for the Auxiliary module). The items were transported for about 1250 km up to final destination. It took 18 days to get to the power plant. Once at site, the items were transhipped onto 5 + 5 axle lines SPMTs for site movements. Hydraulic Gantry Crane and rail System were assembled in foundation area ready to receive the items. Once checked the alignment, the installation operations were safely executed by a 600 ton capacity Gantry Lifting system. Picture at the bottom right shows some moments of the lifting and installation operations.

TRANSPORT AND LO-LO OPERATIONS AT GENOVA PORT

Fagioli were contracted for the transport and loading activity of a 227 ton generator destined to Iran. Picture bottom left shows the loading activity after the road transport executed with Fagioli dedicated support structures and modular trailers.





HEAVY ROAD, RIVER AND

Fagioli Heavy Road department was called to execute several challenging operations for the transport of items mainly for the Oil & Gas industry. Main challenges during all these operations are not only the surveys and feasibility studies necessary to execute transport activities on heavily trafficked roads but also a huge coordination between all the different departments (such as the river and maritime) who are involved in the several legs of the operations. Sometimes the transport of a heavy load from manufacturing area up to its final destination includes the use of special and auxiliary equipment, just for that particular operation and, in some cases the chartering of dedicated heavy lift vessels for the prosecution by sea. The organization of these kind of transports are like jigsaw puzzles which must be perfectly connected whilst the scheduled time hangs over like a sword of Damocles. Picture top left shows the transport and loading activity of a heavy item destined to North Europe. Picture in the middle refers to the transport and loading operations at Venice port of a 41 m long vessel column executed with a convoy composed by 7 + 7 axle lines trailers with drawbar connecting beam, destined to United States.



SEA TRANSPORT OPERATIONS

Picture above shows a challenging passage up to the Dolomites mountains of a 90 ton transformer. It was mandatory the use of 24 axle lines trailers to move a 414 ton column vessel shown in the picture below. Fagioli are proprietary of river barges (as well as ocean barges) used to perform the river transport or prosecution of heavy road transports up to Venice port. Pictures at the bottom on the left page show this kind of activity, in this case for the transport of 103 ton mill sections from Mantova. Once the sections were moved by Fagioli trailers and stored onto dedicated supports, then they were loaded by a wheeled mobile crane onto Fagioli barge, ready to leave for Venice port. In Cremona, Fagioli own a dedicated quay area with a 600 ton gantry lifting system for the direct transshipment of heavy loads onto the river barges. Picture at the bottom on the left is the transport of a column vessel weighing 302 ton. We end up this long list of heavy transports which included various activities with a unique heavy



road transport performed for a power plant positioned in a wonderful valley in the North of Italy. A 70 ton transformer moved for a total of 165 km by means of several equipment: road transport activity from manufacturing area for 140 km; transshipment onto a modular trailer; transshipment from modular trailer onto SPMTs for the last 500 m; unloading and final positioning! Picture below on the right!



SHIPYARD

INDUSTRY

Shipyards are places where ships are repaired and built. These can be yachts, military vessels, cruise liners or than shipyards, which are sometimes associated more with initial construction. The terms are routinely used in merge roles. Fagioli are often called to provide their high-level first class services for the transport operations

other cargo or passenger ships. Dockyards are sometimes more associated with maintenance and basing activities interchangeably, in part because the evolution of dockyards and shipyards has often caused them to change or and loadout activities, by using last generation SPMTs, group-owned barge supported by in-house engineering studies

TWO YACHTS AT NAPOLI PORT

Fagioli were involved in the transport and loadout operations of two yachts at Napoli port. It was decided to use SPMTs and Fagioli barge MAK. The two yachts were placed in construction yard beside the load-out jetty at Napoli port. The transfer operation from barge to floating was as well executed at Napoli port. The two yachts were loaded, stowed on barge Mak and then moved up to floating dock; transferred on dock by ro-ro operation

YACHT TRANSPORT IN ANCONA

A yacht built within Client's shipyard at Ancona port was due to be mobilized up to the launching area. Fagioli were involved in the transport activities providing 36 axle lines SPMTs spread onto three rows. The yacht, weighing 917 ton, reported the following dimensions: 55 m long; 10,2 m wide, 21,4 m high. Once the mobilization was completed the yacht was lowered onto dedicated stools by means of the trailers' hydraulic suspension.

YACHT LOADOUT IN GENOVA

The biggest one weighed 620 ton with a dimension of 55,8 m long; 10,7 m wide and 14,9 m high. 44 axle lines SPMTs were displaced on three rows to perform the handling and transport operations. The loadout was successfully performed onto barge MAK previously prepared to receive also the smaller yacht (64 ton carried by 16 axle lines SPMTs). The ballast operation was executed by Barge ballast system and No 4 mobile Pumps 500 t / capacity each.

The big picture on the background and the smaller one on the right, show another transport and loadout operation of a 1,000 ton yacht by means of 38 axle lines SPMTs. Three rows of trailers including 40 ton capacity axle lines SPMTs were utilized to move this yacht with the following dimensions:

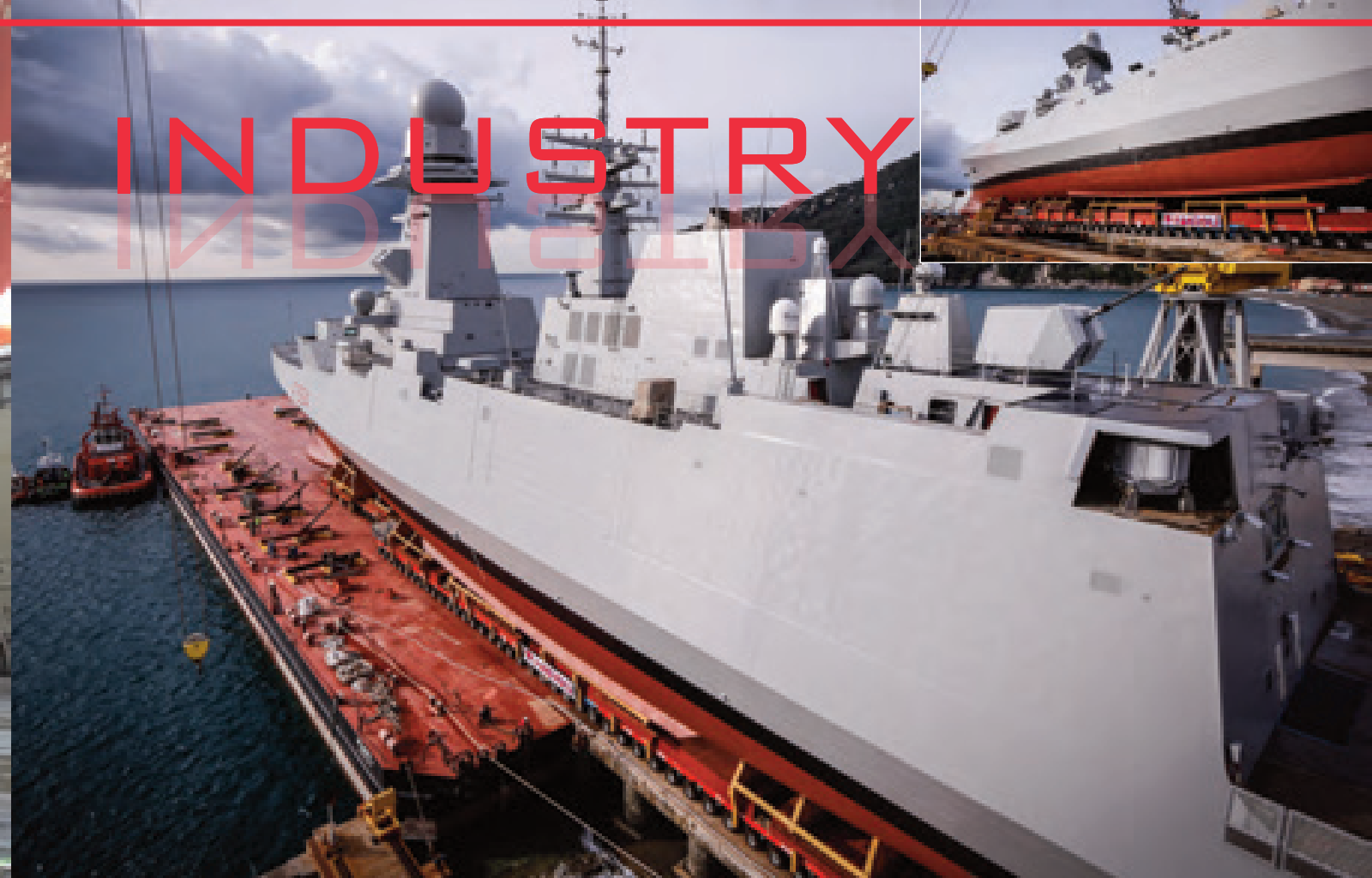
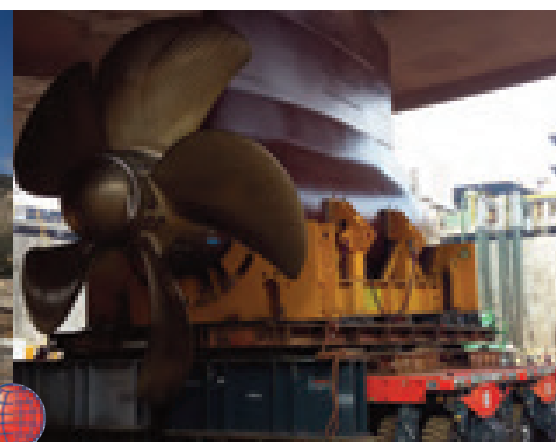
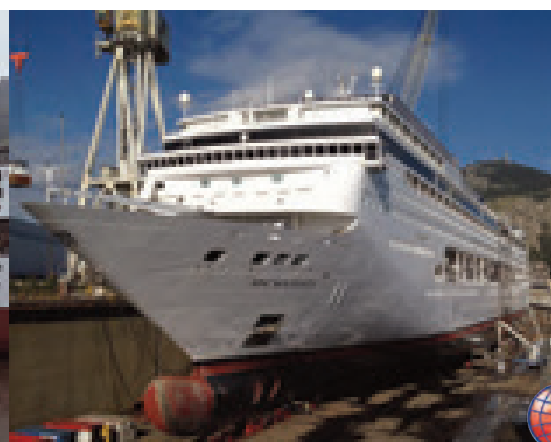
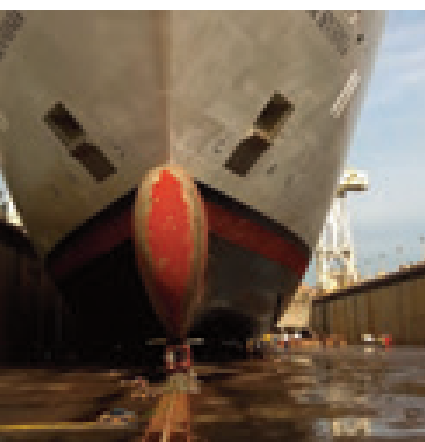
- * length : 69,4 m
- * width : 12,1 m
- * height : 24,4 m

Zero accidents occurred!



JUMBOISATION OF 4 CRUISE SHIPS

Within the last Newsletter (issue 15) we talked about the challenging Jumboisation operation of a cruise ship executed by Fagioli. Fagioli were contracted to perform the same operation for three additional ships weighing 25.000 ton each. The Jumboisation operation was traditionally performed by waterproofing the additional section as well as the bow and the stern after the cutting of the ship. The stern of the ship were kept still with mooring operations while the bow and the additional sections were moved with tugboats all these operations were performed in a yard full with water. Once the three sections were aligned, the dock were emptied and the three sections were laid onto supports. The plates used to waterproof the sections were then removed and the welding operations completed after several adjustment of the sections. The innovative system used by Fagioli was composed of 22 skid shoes positioned onto tracks inside the dry dock. This system allowed the loading and skidding operations of the 14.000 ton bow within the empty dry dock, providing a cost and time saving operational solution and granting a high degree of safety. The sophisticated mechanical and electronic parts of the skid shoes (with capacity of 1000 ton each) were the perfect solution to complete this operation of skidding ahead and pulling back of the bow, after the insertion of the 1997 ton additional section executed by 80 axle lines SPMTs, with a continuous and precise analysis through a dedicated computer facility remotely controlled, of the forces caused by the relevant weight and dimensions of the structure in vertical, longitudinal and transversal directions. Once the additional section was inserted by SPMTs, the three sections were aligned and welded by the client. It took only 11 weeks to complete the operation for each cruise ship. Pictures at the top and at the bottom show some details of the operation.



LOAD OUT, LOAD IN AND LAUNCHING OF SHIPS

Fagioli were involved in several operations for the shipyard industry. Two relevant operations were executed for the load out, load in and launching of a military ship and the section of a huge ship in the Ligurian sea, in the Northwest of Italy. Pictures at the top show the load out of a 6170 ton ship by means of 272 axle lines SPMTs and 8 power packs. Fagioli were also in charge of the ballast operations. The two pictures at the bottom right show the barge transport and load in of the stern of a ship weighing 2766 ton. The operation was executed by means of 144 axle lines SPMTs positioned underneath and composed of three rows of 48 axle lines each. The two operations were safely and successfully completed on schedule.

TRANSPORT AND INSTALLATION OF TWO AZIPODS

Fagioli were contracted for the transport and installation of innovative thrusters called: Azipods. The Azipod is a marine propulsion unit consisting of a fixed pitch propeller mounted on a steerable pod which also contains the electric motor driving the propeller. In the Azipod unit, the electric motor is mounted inside the propulsion unit and the propeller is connected directly to the motor shaft. The whole structure of each Azipod was composed of a POD, a saddle and a propeller for a total weight of 193 ton. The Azipod was loaded by the client directly onto Fagioli 2 x 6 axle lines SPMTs provided with beams and saddles. The item was laid onto Fagioli SPMTs with an inclination of 3 degrees. The inclination was calculated in order to help the Azipod to be more easily inserted. Once the Azipod was fixed onto the trailers, Fagioli operators drove the convoy under the ship. After the necessary adjustment and alignment operations, the Azipod was lifted by the SPMTs hydraulic suspensions up to the required height, ready for the ultimate assembly and connections executed by the client. Picture bottom left.

CRAWLER CRANES



TANDEM LIFT



LIFTING AND POSITIONING OF A 510 TON REACTOR IN TEXAS

Fagioli Inc. are involved in a demanding project for the transport, lifting and installation of modules and reactors for a Pet Plan in Texas, USA. Materials mainly originating from Far East. For this project Fagioli Inc. are called to provide a large fleet of equipment: Tower lift and Strand jacking system, Crawler cranes, SPMTs, Hydraulic cranes, De-stacking system. The amazing pictures in these two pages show the lifting and final positioning of a 510 ton reactor by means of 2 group-owned LR 1750 crawler cranes. The reactor was 85 m long with a diameter of about 6.3 m. Fagioli used SPMTs for the transport operation from port zone to installation area.

For both pictures:
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RELOCATION OF STS CRANES FROM USA TO PUERTO RICO

Fagioli Inc. USA was contracted for the demanding project to relocate No. 3 Ship-to Shore cranes from USA to Puerto Rico. Fagioli Inc. supplied the labour, supervision, engineering, ballast equipment, land transport equipment, support equipment, ro-ro ramps, mats, tools necessary to execute the load-out and load-in operations required by the project. Main phases of the whole operations were the following. Fagioli positioned SPMTs Trailers nearby the STS Cranes in order to receive the cranes' boogies with a weight up to 240 ton. The crane boogies were taken away from the STS Cranes and connected each pair together.

repeated twice for the arrival of the barge on quay SPMT Trailers underneath the (weighing 704 ton), taking the as required. Fagioli used 48 the crane upper body crane. was rolled onto the barge and Client requests for the operations. Then a load out of performed. The loading



twice for the remaining two STS cranes. Fagioli provided the ballast plan and ballast supervision during the load-out and load-in operations. Once the barge arrived at San Juan pier in Puerto Rico the load-in operations were executed in accordance to the storage plan provided by the Client to Fagioli. Fagioli Inc. Usa utilized for this project the following equipment: up to 48 SPMT Axles and relevant Power Pack units, accessories and spare parts; Ballast Pumps required to carry out ballasting of the Barge;

A hurricane hit Georgia State during the assembly operations which caused some problems, which were anyway solved and did not jeopardize the transport activities.

This operation was remaining cranes. Upon side, Fagioli moved the first STS crane upper body load and installing bracing axle lines SPMTs to move The section, 53 m high, positioned according to the seafastening and stowage the bogie assembly was operations were repeated



DOOR-TO-DOOR TRANSPORT OF A CONVERTER AND A CARTRIDGE FROM ITALY TO OKLAHOMA

Fagioli Inc. USA was contracted for local transport of a converter and a cartridge originally manufactured in Italy, transported by Fagioli SPA to the port of loading and embarked onto a dedicated H/L vessel destined to the port of Houston. In USA Fagioli Inc. executed the final transport and installation operations of the two items in USA. Once arrived at the port of Houston, the converter (weighing 450 ton) and the cartridge (weighing 96 ton) were unloaded by vessel gears directly onto supports on the deck of a barge chartered by Fagioli (picture above). Engineering calculations were provided by Fagioli for the ballasting during

transport operations. Once port ro-ro ramps were prepared trailers to get onto the barge the two items. Fagioli SPMTs for the converter 18 axle lines SPMTs for the the SPMTs executed the load in operations up to the designated by the Client Fagioli EZ600 gantry lifting



and prepared in order to receive the two items from the trailers. After the lifting operation, the SPMTs were removed and rail units were positioned to receive the converter and the cartridge. After 168 km the rail wagons arrived close to site where Fagioli gantry lifting system was re-assembled in order to take the loads and positioned them directly onto the SPMTs. The two items were transported up to their final destination at site. This was a real door-to-door project from manufacturing area up to site of destination which involved Fagioli Spa Italy and Fagioli Inc. USA for the provision of a high level of safety oriented services which included between others dedicated feasibility studies and engineering. The equipment involved in this project was: 24 axle lines modular trailers and barge in Italy; H/L ship, deck barge, SPMT's and Gantry lifting system.

the loading and river arrived at unloading river in order to allow the and be positioned under provided 2 x 14 axle lines (picture at the top) and 1 x cartridge. Once in position and road transport transload location point (pictures at the bottom). system was assembled





TRANSPORT OF A CANTILEVER BEAM

Fagioli Inc. USA was awarded the SPMT transport operations of a 1905 ton cantilever structure and a drill-floor package in Texas. Dimensions of the cantilever were: 42 m x 21.5 m x 75 m. Fagioli provided No. 88 lines of SPMTs and No. 5 power pack units (1 spare included). First Fagioli performed the weighing of the heavy items by means of SPMTs, then after confirmation by the Client, along the designated path until item beam was very close to the jack-up area. The SPMTs were raised to once located the item beams incrementally manoeuvring approached the jack-up final positioning of the item work was achieved by Cantilever was slid into its position (pictures at the top and on the left).

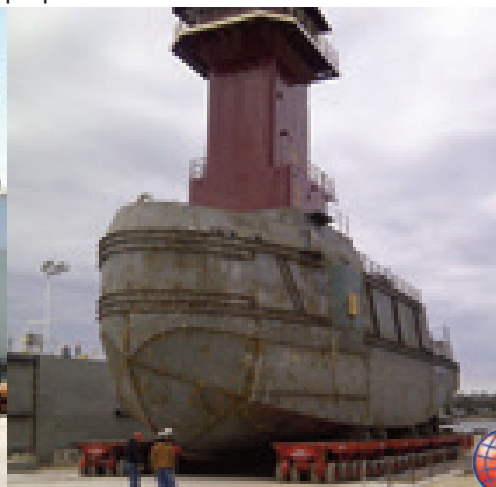


SHIPYARD

Fagioli Inc. was involved in several heavy transport activities for the shipyard industry. Picture at the bottom left shows the transport and load out of a 2600 ton US military ship weighing 2589 ton performed by 104 axle lines SPMTs. Picture bottom right is the transport and load out operations of a tugboat by means of 36 axle lines SPMTs. Fagioli Inc. was also involved in the engineering procedures and the preparation of detailed studies for the preparation of dedicated saddles.

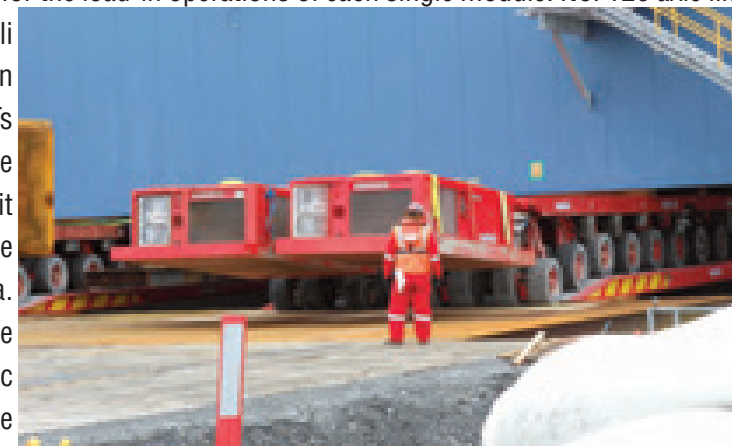


Courtesy of MMC



LOAD-IN OPERATIONS IN ALASKA

Fagioli Inc. USA was contracted for the transport (load-in activity) operations of several modules weighing up to 3.300 ton in Alaska. After the arrival of the barges at designated dock, the barges were secured, the sea fastening was removed by the Client and SPMTs arranged for the load-in operations of each single module. No. 120 axle lines SPMTs were assembled for the biggest module. Fagioli positioned the ro-ro ramps on the stern of the barge in accordance with the engineered plan. The SPMTs single module and took the entire weight of the item onto the transporters, securing it with chains and executing the load-in operations. The modules were taken to the designated installation area. Once arrived at the modules were lowered onto the foundation / storage area, the piles with SPMTs hydraulic mentioned operations were repeated for the remaining heavy items (pictures above).



LNG PROJECT

Fagioli Inc. was involved in the transport, load-in and engineering activities of 135 heavy items for the construction of a liquefaction plant in USA. This long-term project started in 2014 and is still on the run at the time of writing. Fagioli scope of scope involved the use of SPMTs for the transport activities with modules weighing from 20 to 1390 ton. After the load-in operations Fagioli Inc. was also in charge of the final installation of some of the heavy modules (below: river transport of cold boxes.)



FAGIOLI

FAGIOLI LatinAmerica operates on South and Central America territory for the Oil & Gas, Offshore, Power and Civil industry.



WEIGHING TRANSPORT AND LOAD OUT OF A 3100 TON LIVING QUARTER

Fagioli LatinAmerica and Fagioli Inc. were involved in the Mafumeira SUL project for the weighing, transport and load out of a living quarter going to Angola. The module was manufactured in Mexico and moved within Altamira port area for the loading operations. For the weighing activity Fagioli used 6 x 300 tons load cells and jacks and 8 x 200 tons load cells and jacks. The weight of the living quarter was about 3100 ton. For the transport operations Fagioli LatinAmerica used 108 axle lines SPMTs (6 rows of 18 axles each as shown in the picture above) including 6 ro-ro ramps for the load-out activity. Clearance between grillage and SPMTs was no more than 2 cm on each side for a very precise operation.



LR 11350 IN ACTION

In Fagioli Newsletter issue 15 we presented the weighing, lifting (with dedicated jack-up system) and load out operations of a 12.200 ton topside module in an offshore site in Mexico. Fagioli LatinAmerica was contracted to perform the same operation for another offshore module including the installation of heavy sections by means of crawler crane. For this new scope of work Fagioli put in place our biggest crawler crane available, an LR11350 with a capacity up to 1350 ton. See picture on the left.



MEXICO



WEIGHING, TRANSPORT AND LOAD OUT OF No. 59 MODULES

Fagioli LatinAmerica was awarded the contract to perform several heavy load operations in Tampico, Tamaulipas. One of the biggest engineering-construction company in Mexico, dedicated to the engineering, procurement, construction and maintenance of industrial facilities in the oil and gas, chemical, petrochemical awarded Fagioli for the transport, weighing and load out of modules destined to Canada. A total of 59 modules weighing up to 316 ton (and for an overall weight of abt. 9.900 ton) were mobilized by Fagioli SPMTs from beginning until September 2015. Weighing operations were carried out with digital load cells (40 and 60 ton each) and jacks positioned in each leg of the module. The weighing procedure was performed by placing the load cells on dedicated stools where operation was repeated three times. The final weight was given by the average load recorded at each support in the course of three measurements. After the weighing operation Fagioli provided the final transport and positioning operations required by the Client.

Modular fabrication, compared to stick-built approach, enhances safety performance by transferring work at heights to ground level and improves quality and productivity by working in a controlled yard environment.



FAGIOLI INDIA

Fagioli India was successfully involved in the lifting and installation of several heavy items for the power industry. The continuous growth of the Indian economy and the investments in sectors such as power, infrastructures and petrochemical, require engineered heavy lifting and transport services. Fagioli India with its long-standing experience is the right partner to perform engineered heavy lift operations such as those shown in these two pages. Please check also in the Oil & Gas section, the installation of two vessels performed by Fagioli India.

CEILING GIRDERS ERECTION

Fagioli India completed last year the first part of a demanding project concerning the skidding, lifting and installation of a ceiling girder for a new power plant built in Maharashtra state. In 2015 Fagioli India completed the installation of the 2nd ceiling girder weighing 730 ton using the strand jacking system positioned on top of the supporting structure at a height of 102 meters. It took five operational hours in three days to lift the section at about 45 m and six and a half operational hours distributed in two days to complete the operation. Pictures on the left show the lifting moment and some details of the strand jacks.

INSTALLATION OF HEADER BLOCKS

In Rajasthan, Fagioli India was contracted for the lifting and installation of header blocks (left and right) at a thermal power plant. For both jack-up operations the items weighing 54 ton each, were lifted up to 54 meters in three working days. Picture bottom right shows a detail of the lifting operation.

LIFTING OF BOILERS

The installation of 4 units of boilers weighing up to 160 ton each was executed in Gujarat state by Fagioli India with the use of strand jacking system. The operations consisted in the hoisting activity of the boilers up to 50 meters height and a skidding activity of about 1.5 meters. It took about three hours and a half to complete the installation process. Picture bottom left.

INSTALLATION OF A MG CYLINDER

This was the first time in Paper Industry of India that Strand Jack and Tower arrangement was used superseding the traditional method of jack up and jacks down to handle a 120 ton cylinder inside the plant house. Fagioli India designed a customised, project specific scheme which was less time consuming and cost effective and with at most safety. The project was completed under very tight work duration. Fagioli provided triangular tower with 3x3 meter tower base and 12 meter height on a civil foundation provided by Client at ground level and a two tower on Cylinder deck to support the cross head beam directly connected between two towers (pictures on the right)

INSTALLATION OF HOUSE MILL & EDGER

Fagioli India successfully completed the installation of Housing Mill & Edger assembly at Bokaro steel plant. This was the first of its kind as a shutdown job executed by Fagioli in India. The complete project took one hundred hours of engineering and man-hours to make this project successful and was executed in a tight schedule of shut-down period assigned by the client. Site was very compact and restricted with limited space to operate. Fagioli used two sets of EZ Gantries with Lifting Capacity of 600T each along with 4 nos. L180 Strand Jacks (180T) positioned on the 30 meter cross head beams placed between two gantries to form a complete assembly of Fagioli equipment. Housing Mill lifted by 2 meters at its initial position followed with 20 meters skidding and lowering of 3 meter to position on its final foundation. Whole project of lifting, skidding and final installation activity took 7 hours to safely position onto the foundations including the final alignment of the RR2. For Edger erection Fagioli used similar arrangements of EZ Gantry and Cross Head Beams with 2 Nos. L180T strand jacks along with minor changes into anchors to connect Edger - Jack assembly. Edger was lifted by 500mm and performed vertical 4 meter skidding, before 12.5 meters horizontal skidding edger was rotated by 90 degrees and lowered 3 meters after reaching the final position.





BLAST FURNACE REPLACEMENT

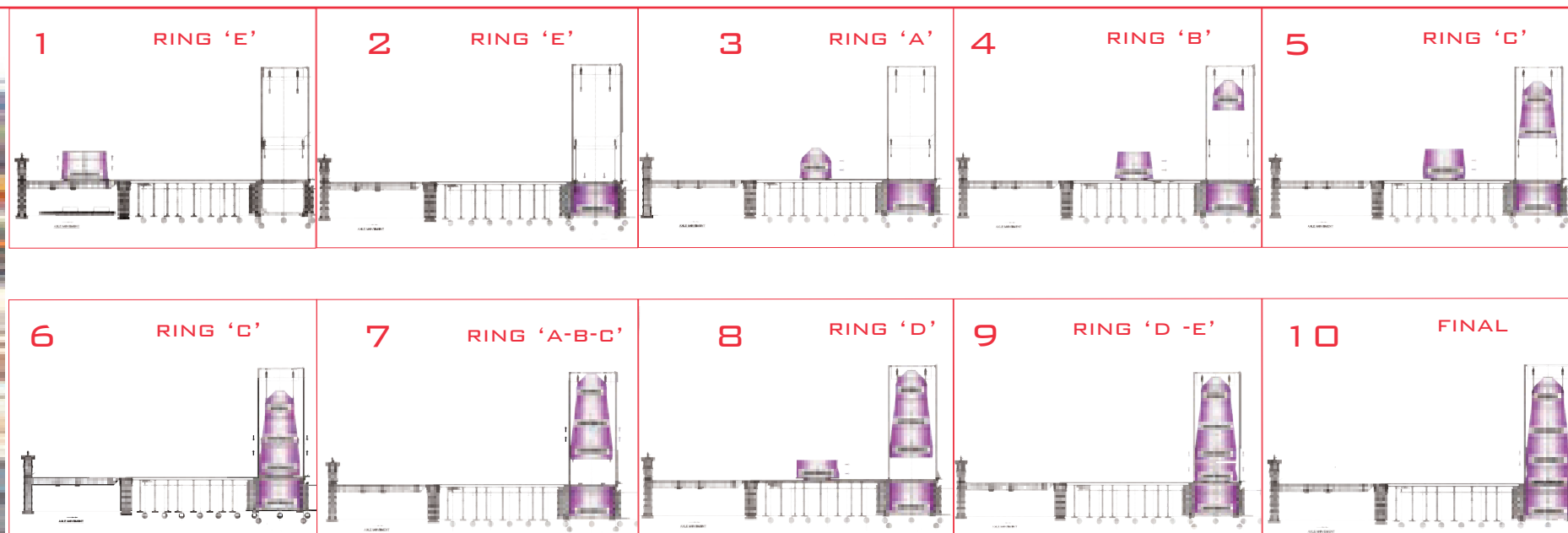


Fagioli India was contracted the replacement of an old blast furnace composed of No. 4 rings with a new unit, made of No. 5 sections. The old sections were lowered and skidded from its final position and transported by SPTs to a storage area. Once the old unit was dismantled, Fagioli India skidded and installed the new sections. The old blast furnace unit was composed of 4 rings with a weight for each unit between 250 and 460 ton. The lowering, skidding and transport to storage area operations started on the 10th of October and ended on the 17th. The equipment and structural components used for lowering old BF rings and installation of new BF rings were a mix of strand jacking, tower lift and skidding system. The new blast furnace unit was composed of No. 5 sections. The sections were transported, skidded and installed between the 19th of October and the 7th of November. MAIN STEPS FOR THE REPLACEMENT

- 1) The first ring (E) to be installed was the 592 ton item which was transported from storage area up to the lifting area. It was connected to the fixed anchor housing at lifting beams of side tower A and B. Fagioli started lifting the elevator girders up to 50 mm from the bottom of the ring and fixed the L 15 pulling jacks (tower A and B side) to the roller beams. The stoppers were installed at the roller points to keep them locked with the girders.

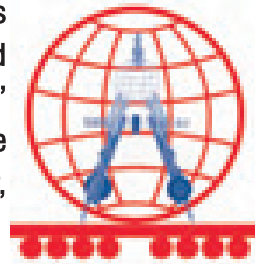


Once the elevator reached the skid tracks level the transition piece and longitudinal bracings between the elevator girders and the skid tracks were installed. The L15 pulling jacks (towers J and K) were connected to the roller beams and the stoppers from elevator girders were removed. 2) The ring E was skidded with great care onto the bridge beams to the final position. N°4 x L450 strand jacks were connected and the item was lowered up to the foundation. 3) For ring A (348 ton) Fagioli executed the same operation shown above but instead of a lowering action, the item was lifted and kept suspended. 4) ring B (410 ton) was lifted, skidded and taken into position between ring E (at the bottom) and ring A (above). Fagioli started lowering ring A up to 50 mm above ring B. The two rings were connected by the Client and lifted. 5) Ring C weighing 291 ton was lifted and skidded onto the elevator girder. 6) Rings A+B were lowered and connected to ring C. 7) Rings A+B+C after being connected together, they were lifted. 8) Ring D (284 ton) was lifted and skidded onto the elevator girder. 9) Ring D once aligned and in position was connected by the Client to ring E (the one at the bottom). 10) Rings A+B+C were lowered and connected to ring D+E for the final operation. The elevator system was positioned at a height of 8 meters for a skidding system of 70 m in length! What a great job!!!



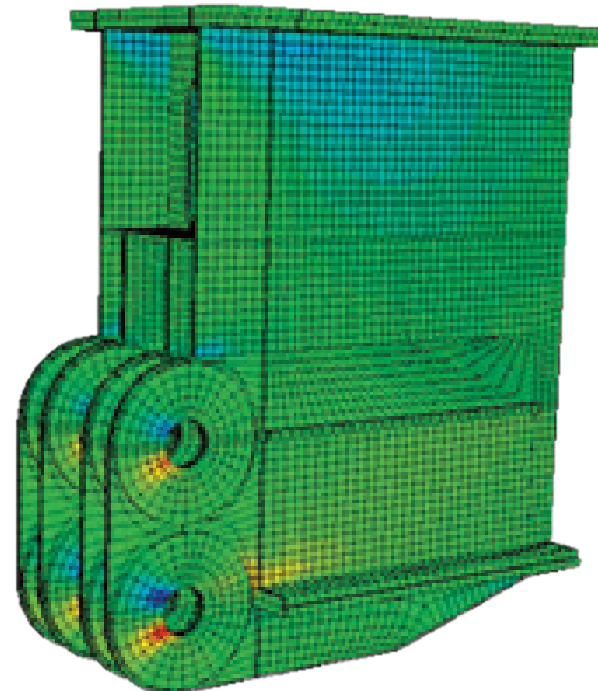
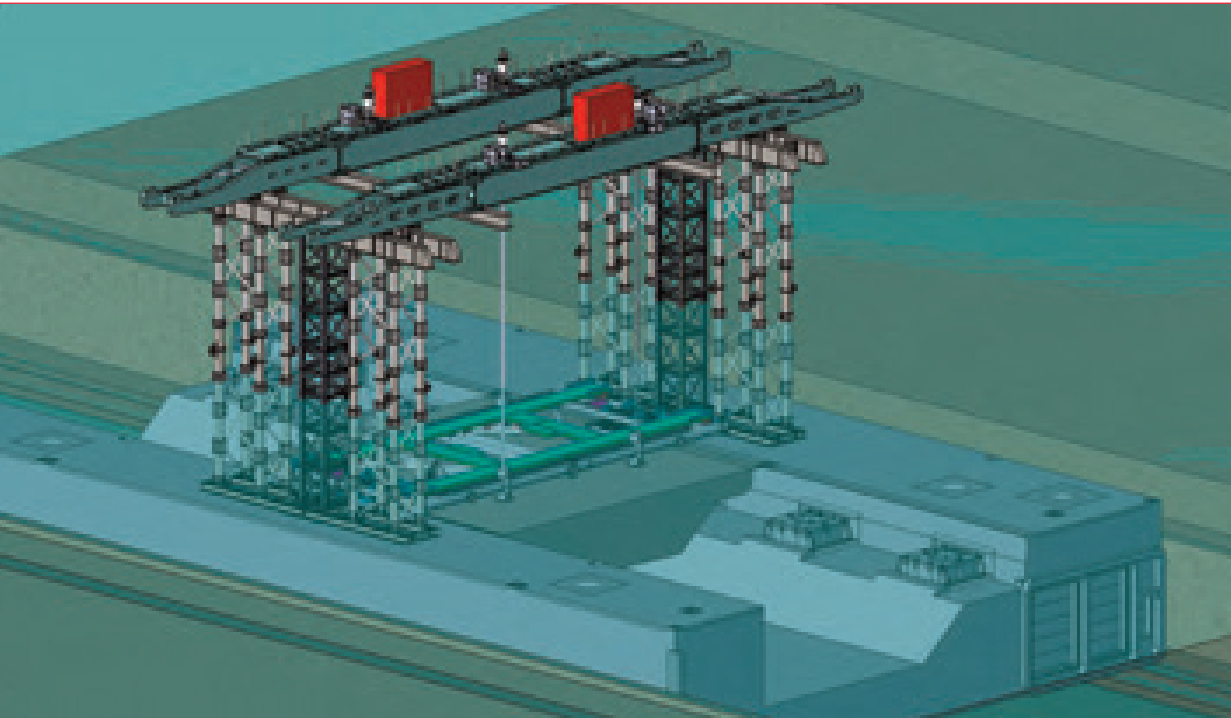
ENGINEERING AND FEASIBILITY STUDIES

The word "Engineering" derives from the Latin term *ingenium*, meaning "someone who is particularly clever" in finding solutions. Fagioli are one of the few companies who are qualified and certified by DNV also as a qualified Engineering Company, thanks to our "first-class" in-house engineering department. We are able to offer an added value activity which allows the company to be able to operate side by side with the client from the initial stage of any project, or during the early feasibility study stage, therefore anytime that our services are required.



FAGIOLI
ENGINEERING DIVISION

operational manuals; heavy road transport procedures; method of statements; risk assessment studies). When it comes that a peculiar transport/lifting operation needs innovative solutions to be safely carried out the engineering department issues the needed technical documents for procurement; for the fabrication of new equipment / hardware such as saddles, special beams, including technical specification, fabrication inspection plan and test procedures. All these activities are agreed with the



The main goal of the Fagioli engineering department is to plan, define and handle all the possible risks and contingencies related to the transport, lifting and installation of heavy loads. Fagioli engineering department follows the different steps and stages to finalize the overall turnkey study of required and/or lifting operation.

SURVEY

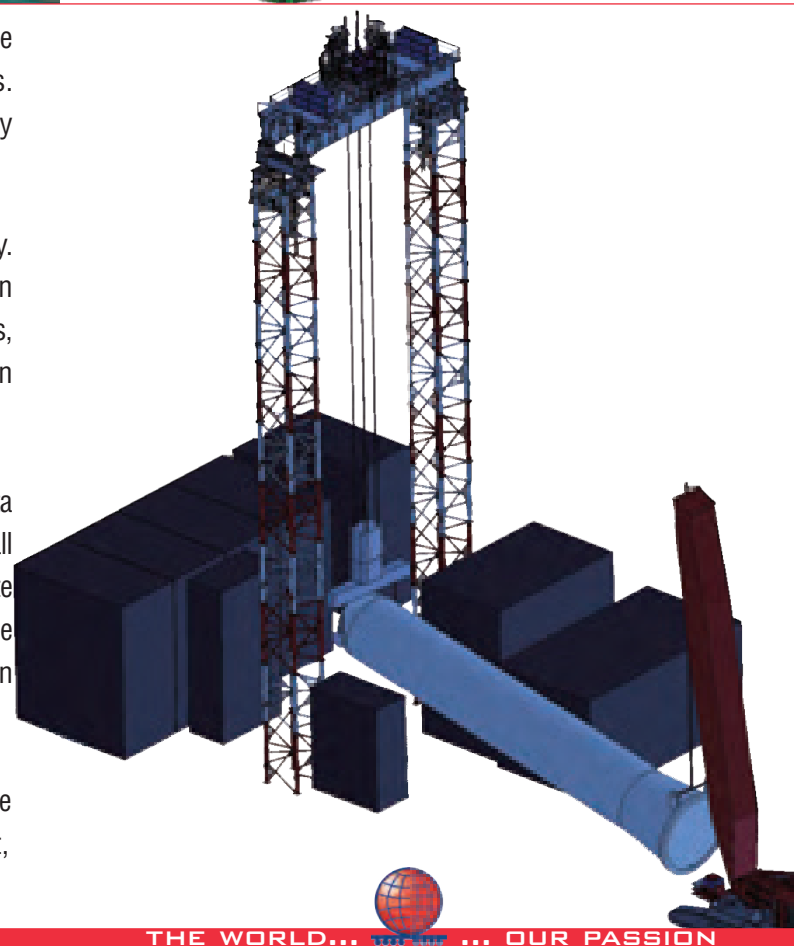
Route and road surveys are the first necessary step to be taken while preparing a detail feasibility study. Fagioli experienced operators collect all the necessary information by studying the best route to be taken with a dedicated analysis of all the infrastructures (highways, roads, bridges, traffic lights, electrical posts, railway tracks...) not only in terms of measurements but also considering their structural capacity. Then the survey data collection is provided to the engineering department for the final calculations.

DESIGN CAPABILITY

A dedicated Project Engineer supported by experienced draftsmen start the evaluation of the data collected by our survey personnel and the drawings / info received from the Client in order to have all the mandatory elements to issue a free of eventual accident report. Through our in-house up-to-date software programmes, including AUTOCAD- SOLIDWORKS - FEM PROGRAMS (2 -3D) -in-house developed programs and calculation sheets, Fagioli engineers are able to provide design documentation for the heavy steel, offshore, industrial plants, power, fabrication construction area.

ENGINEERING TARGETS

Engineering targets are the production of complete and clear technical documentation for a safe execution of all yard operations (installation drawings; installation procedures; check list,



commercial department and of course the Client, in order to keep a strong link with the operational activities and enhance all the safety aspects in a continuous and innovative improvement.

ENGINEERING INPUT

Fagioli engineering activities are based on the following engineering inputs:

Contractual documents (including Contract, Client's dwg's, procedures...) National and international standards Any technical queries relevant to or with influence on the above mentioned document Technical info collected during the meeting with the Client or directly supplied by Client Previous Fagioli experience in similar jobs Site surveys

ENGINEERING INPUT REVIEW

The input information and the document provided by the Client is reviewed in order to identify eventual errors, omission (related to Fagioli scope of work), or changes which could improve the quality, HSE, integrity or operability of the work, lower the cost and improve the schedule.

Main activity: Installation tolerance Weight report Access Safety Schedule Cost

ENGINEERING OUTPUT

Fagioli engineering output meets: the engineering input requires give reference to the acceptance/operation criteria identifies the characteristic for a safe execution of the work conforms to appropriate regulatory. Typical Engineering outputs are: transport / installation drawings; procedures, operation manuals; structural calculation reports; fabrication and inspection plans; calculation reports; material list; design and shop drawings ; simulation. Engineering is a very important and relevant Fagioli core business!

The need to follow change to remain oneself! Fagioli are on the tracks of a fast and demanding international market which requires flexibility and continuous “renegotiation” of their operational, engineering and working style approach. This is the main reason why Fagioli feel the need to shed their skin on a day by day basis, getting in the game with new communication activities. Fagioli Human Resources and HSE departments involved Fagioli personnel at all levels to find new ideas to better highlight the NEW FAGIOLI VALUES and a payoff to identify FAGIOLI HSE “zero Accident” philosophy.



FAGIOLI NEW VALUES

TEAM SPIRIT AND RESPECT - Fagioli are a team and believe in the importance of being a team. The pronoun “We” prevails over the pronoun “I” and the differences in our experiences, ages and cultures enhance the group of inestimable worth.

OWNERSHIP - Fagioli personnel acts as if the company is owned by itself. We are looking for new opportunities and new challenges, setting ourselves ambitious targets and aiming to improve constantly. The success of the 'Company is our own success.

CUSTOMER SATISFACTION - Customer satisfaction is our goal. We listen to customer needs, we propose innovative and safe solutions by following the highest standards of quality. We promote mutual growth based on relations of mutual trust.

PASSION AND KNOW-HOW EXCELLENCE - Those who rely on our services can count on reliable experts: we provide passion, know-how and excellence of skills to bring to a successful conclusion our undertakings. We wish to enrich constantly our knowledge to ensure the best service.

HEALTH AND SAFETY - Operating in full compliance with the principles of health and safety is our priority. In our respective areas of work, each of us receive the necessary tools and training procedures to operate under safe conditions. Reducing risk for our staff, for our customers and the communities in which we operate around the world is a goal that we pursue relentlessly.

FAGIOLI NEW HSE CAMPAIGN

Fagioli HSE department launched a campaign to find a new slogan which could define the most suitable approach during our daily working activities.

This campaign involved all of the Fagioli personnel from our global network and the winning slogan turned out to be **WORKING ON THE SAFE SIDE!** quoting from the famous Lou Reed song “Walk on the wild side”.

Fagioli HSE department made several two meters high panels (picture on the right) and distributed them to all Fagioli working places (warehouses and offices) in order to highlight all the matters related to safety. For Fagioli, training, information and communication are great tools to motivate, inspire and help our employees to face and live in “the jungle” of our challenging job!

**WORKING ON
THE SAFE SIDE!**

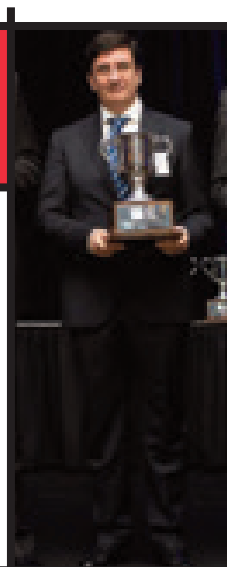


FAGIOLI

AWARDS & ART



Definition of Art: *The quality, production, expression, or realm, according to aesthetic principles, of what is beautiful, appealing, or of more than ordinary significance.* Art is a word which defines the several range of human activities and the products of those activities, usually involving imaginative or technical skill either if we talk about paintings, statues, musical masterpieces or innovative engineered transport and lifting operations. Also this year Fagioli were awarded with important rewards for two brilliant operations executed last year. For the SC&RA contest in USA, Fagioli received the award for the category “RIGGING JOB OF THE YEAR” for the lifting and installation of 4 struts for the new Isozaki Tower, a futuristic building erected in Milan (“painting” at the top on the left). Mr. Edoardo Ascione, president of Fagioli Inc. USA (picture bottom left) received the award. In Italy during the ILTA Awards Gala Night, Mr. Fabrizio Ferrari, Sales Director Heavy Lifting & Haulage Division of Fagioli Spa received the award for the category “SPMTs” for the Paramaribo project (“painting” at the top on the right), for the transport of modules from Italy to Suriname. What about the painting in the centre of the wall? Mr. Giovanni Ronchini did it, Senior Sales Manager of Fagioli Spa well known to be a dedicated and talented guy. The attitude he shows for his “official job”, is shared also with his main hobby: the artistry of painting.



NEWS FROM FAGIOLI WORLD

EMERGENCY INTERVENTION FOR RIVER FLOODING IN MILAN

Fagioli have wide experience in National and international operations providing group-owned equipment and personnel to relief agencies and Civil Protection National Department to face the state of emergency after natural disasters. Fagioli were called for an urgent intervention to safeguard the town of Milan from a terrible river flooding which occurred in the second week of November 2014. Milan cemetery and Linate Airport needed to be cleaned from the incredible mass of rainwater which had fallen in just a few days. Fagioli promptly organized a dedicated team to provide four pumps (one used as contingency) to drain the water out of basements and cellars.



FAGIOLI IMPLEMENT THEIR FLEET WITH 100 AXLE LINES SPMTs AND SKID SHOES

Fagioli are implementing their transport capability with the purchase of 100 axle lines SPMTs (standard and winterized models).

Fagioli have upgraded their skidding system fleet with the construction of sophisticated skid shoes (capacity of 1000 ton each with the possibility to be coupled) used for the Jumboisation operations of cruise ships as shown in the shipyard section. Fagioli own No. 84 skid shoes, and most of them will be employed for a skidding and installation operation of offshore sections weighing up to 48.000 ton. The project will be executed in Canada.



FAGIOLI NEW CORPORATE PROFILE



Fagioli are proud to present the new corporate profile downloadable from Fagioli website www.fagioli.com. The new corporate profile features all the activities of the group, implemented during these last years. The 52 pages books represent the “summa” of Fagioli activities, core business, business areas and state-of-the-art equipment. The corporate opens with our mission: *“Being leaders in design and engineering applied to specialized hauling and lifting operations as well as the execution of project forwarding and logistics activities. Fagioli have quickly established themselves as the unsurpassed leader in performing such activities not only in their homeland Italy but on the worldwide stage. Acting as a ‘real’ partner for our clients, starting from the feasibility phase and supporting them through the project development phases with innovative solutions: on project completion, the clients resulting success is our force. Being Fagioli means: reliability, innovation, efficiency, care, pro-active actions, loyalty and a continuous search for excellence all of which are part of our spirit. Alessandro Fagioli, The President”*

NEWS

SC&RA WORKSHOP IN DENVER

Mr. Chrys Lane, Fagioli Inc. Sales Manager was invited to attend and give a detailed presentation on “Isozaki Tower” job at 2015 SC&RA Crane and Rigging Workshop held in September 2015 in Denver, Colorado Usa. As shown in the previous pages Fagioli won the 2015 Rigging Job of The year for the category between \$150,000 and \$750,000. The job awarded was for the installation of connecting beams to Italy’s tallest building by means of tower-lift and strand jacking system with a lowering operation inside the tower.



BREKBUK BELGIUM 2015

In May 2015, a vast delegation of Fagioli, from Project Logistics & Freight Forwarding, Heavy Road Transport and Marketing divisions attended the annual Breakbulk Europe conference and exhibition in Antwerp. Fagioli will be present next year at the same exhibition. See you at Breakbulk 2016 at Fagioli boot 413 H2.



THE DELEGATION OF THE AUSTRALIAN EMBASSY IN ITALY VISITED FAGIOLI HEADQUARTERS

During the second week of April, The Fagioli Management (Mr. Fabio Belli, Mr. Paolo Cremonini, Mr. Andrea Gazzola, Mr. Moreno Massetti and Mr. Riccardo Tippmann) were extremely delighted to welcome the Honourable Mike Rann, Ambassador of Australia in Italy, accompanied by Mr. Bill Muirhead and Mr. John Rees, respectively Agent General and Trade and Investment Director, both representing the Government of Southern Australia. Our Group have been working in Australia in recent years, this extremely pleasant arrival gave us the honour and opportunity to brief the important Delegation about Fagioli’s set-up, development and activities allowing us to show them our organization more “from the inside” and talk together about the huge and important development plans that the government of Southern Australia is successfully undertaking.



CONTRIBUTIONS & COMMENTS

Thank you to all those who contributed to this edition of the News Letter. A special thank goes to Mr. Martin Burke. We appreciate your comments please continue to send them to: Rudy Corbetta - r.corbetta@fagioli.com

FAGIOLI GLOBAL PRESENCE



THE WORLD...  ... OUR PASSION

VISIT OUR WEBSITE AT WWW.FAGIOLI.COM